

CASE REPORT

A case report of torsion of the gravid uterus caused by pelvic adhesion

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Key Clinical Message

In this case, a patient experienced rare uterine torsion during pregnancy, detected by MRI. Diagnosis before Cesarean is helpful to achieve better outcomes, highlighting the importance of attention in high-risk groups.

Abstract

Uterine torsion during pregnancy is a rare complication and its risk factors and diagnostic modalities have not yet been clearly defined. Here we present a case of uterine torsion due to unexpected pelvic adhesion. A 34-years-old primigravida patient underwent an emergency cesarean section for aggravated maternal preeclampsia symptoms at 34+0 weeks of gestation. Intraoperatively, after the baby was out, it was found that the uterus was rotated about 90 degrees to the right by dense pelvic adhesion in posterior uterine wall. In this patient, a rightward vaginal stretch was represented through a retrospective review of magnetic resonance imaging (MRI) before childbirth. To our knowledge, this is the first reported case of uterine torsion during pregnancy with MRI. Diagnosing uterine torsion in advance or paying attention to incisions during operative delivery will lead to better management in this condition and good perinatal outcomes.

KEYWORDS

gravid uterus, pelvic adhesion, uterine torsion

1 | INTRODUCTION

Uterine rotation during pregnancy is considered normal when it is less than 45 degrees relative to the long axis of the uterus. In contrast, uterine torsion is a pathologic condition that rotates more than 45 degrees and is a rare pregnancy complication.¹ It can cause abnormal fetal presentation, delivery disorders, abdominal pain, and vaginal bleeding.² The risk factors are not apparent,

but in most cases previously reported, uterine fibroids, uterine anomalies, ovarian tumors, and abnormal fetal position have been reported as causes of uterine torsion.³ Here, we report a case in which uterine torsion due to pelvic adhesions was diagnosed in cesarean delivery without any causative factors such as fibroids or uterine anomaly during pregnancy. The prenatal findings of MRI can give an essential suggestive clue through retrospective review.

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2 | CASE REPORT

A 34-year-old (Gravida 1 para 0) patient visited our emergency department with a headache and high blood pressure, 158/109 mmHg at 33+3 weeks of gestation. The patient had no other medico-surgical history other than a diagnosis of placenta previa at a private clinic. A sonographic scan showed fetal transverse-lie, fetal growth restriction, and placenta previa totalis with findings of multiple lacunae and increased vascularity at the retroplacental area.⁴ In MRI for evaluation of placenta accreta, placenta previa totalis of the left lower location of the placenta with accreta was suspected.

After 4 days of hospitalization with medication, an emergency cesarean delivery was performed due to progressive headache, chest discomfort, uncontrolled blood pressure, and breech presentation.

Using a Pfannenstiel incision to access the abdominal cavity, we observed the presence of placenta previa and accreta resulted in an abundance of engorged vessels in the lower segment of the uterus, complicating the clear identification of the bladder top. Furthermore, identifying the round ligament was particularly challenging due to the dense adhesions caused by severe endometriosis. The uterine incision was performed in the anterior lower position. After delivery of the neonate, the uterus was exteriorized and checked to determine the uterine anatomy, and the uterine incision was found on the left side of the uterus (Figure 1A). As shown in Figure 1B, the left side of the picture is the front of the uterus, and it can be seen that the incision was done with the uterus rotated 90 degrees to the right. Severe endometriosis led to significant pelvic adhesions, particularly in the cul-de-sac area (Figure 2). These adhesions, we have hypothesized, played a pivotal role in the progression of uterine torsion more than 90 degrees, dextro-rotated, from the long axis as

the uterus enlarged during pregnancy. The operation was completed after confirming the ligament including the left uterine vessels with meticulous hemostasis.

She delivered a living female baby weighing 2040 gm and the fetal APGAR score was 6 and 7 at the 1' and 5' min respectively. Estimated blood loss was approximately 1500 cc, transfusion was done with two pints of packed red blood cells and two pints of fresh frozen plasma. The condition of baby was stable under neonatal intensive care unit and discharged after good feeding practice after 14 days of hospitalization. The mother was discharged without any events after ensuring her health on the third postoperative days, and fully recovered without sequelae.

3 | DISCUSSION

This case exemplifies a rare but clinically significant pathway where adhesions caused by endometriosis precede and potentially contribute to the occurrence of uterine torsion. In addition to adhesions, the complexity of this case, including the presence of engorged vessels due to placenta previa and accreta, underscores the unique surgical challenges encountered in case of torsion. It highlights the critical importance of preoperative diagnosis to ensure meticulous surgical planning and execution in such complex scenarios.

Uterine torsion during pregnancy is very rare, which is a complication that can occur at any time during pregnancy with high perinatal mortality and morbidity.² In particular, it is clinically crucial because can result in catastrophic conditions such as massive bleeding and injury of uterine vessels when a uterine incision is performed without consideration of uterine torsion. Maternal mortality is highest at 5–6 months of gestation (17%) and decreases

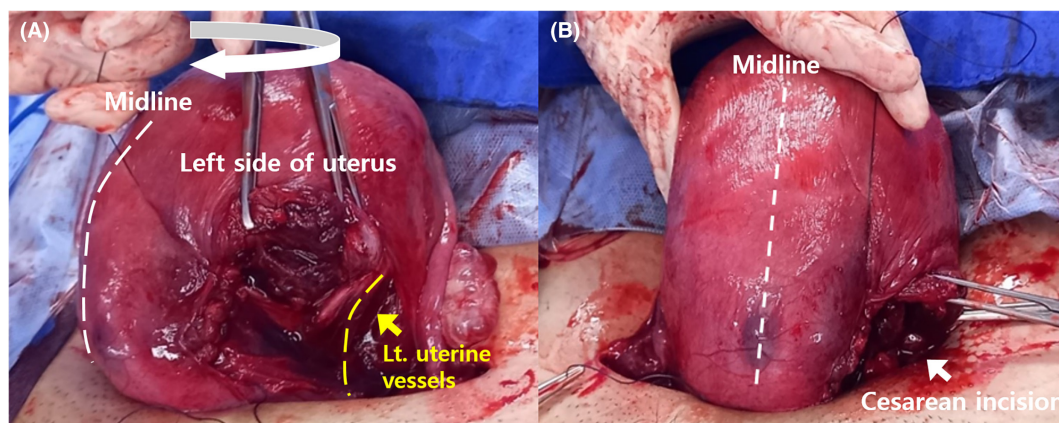


FIGURE 1 (A) After delivery of baby, left uterine vessels are observed just next to the incision site (Yellow arrow: left uterine vessels, Rotated white arrow: rightward uterine torsion). (B) After detorsion of the uterus, Cesarean incision was clearly noted on left lateral side of the uterus (arrow: Cesarean incision of uterus).

with increasing gestational age. According to few reported cases, 180–360 degree torsion has a mortality rate of 36%. Fetal death occurred in 71% of the same angles.² The overall perinatal mortality rate during uterine torsion has been reported from 12%² to 18%⁴ due to uterine venous occlusion or decreased uterine venous blood flow during uterine torsion. Reduced blood flow leads to decreased placental perfusion, which may lead to placental abruption, fetal distress, and death.⁵

However, it is difficult to diagnose before performing laparotomy due to no specific diagnostic tools including clinical symptoms and signs. In addition, nonspecific clinical symptoms ranging from asymptomatic or mild to severe abdominal pain are very common in pregnancy, making it more difficult to diagnose.³ So uterine torsion is misdiagnosed as placenta abruption,¹ pain-induced myomas,⁶ fetal distress during labor,⁷ and traumatic injury.⁸ Our case did not present any specific clinical feature.

Another preoperative diagnosis of uterine torsion with imaging study is also very difficult, but sometimes

ultrasonography or MRI is helpful. Few previous cases have been reported that uterine torsion can be identified by changes in the position of the placenta⁹ or abnormal positioning of ovarian vessels through sonographic scan.¹⁰ Also, Liang¹¹ speculated that detection of abnormal duplex uterine artery Doppler flow might be probable in diagnosing uterine torsion.⁹ As we know, uterine torsion confirmed in MRI so far has been limited to nonpregnant uterus.^{12,13} According to those reported gynecologic cases, X-shaped vagina, vaginal stretch signs, and whirled cervix signs could be observed in MRI.¹²

In our case, even though sonographic images could not give a valuable information, when the images of MRI were reviewed retrospectively, uterine torsion could be suspected with the same findings in a few previously presented a gynecologic case of uterine torsion. First, a rightward vaginal stretch and cervix elongation in the coronal and transverse T2-weighted images are described in [Figure 3A, B](#). Second, in [Figure 3C](#), a whirl sign of a cervix due to torsion is observed, which is twisted along same the direction of rotated uterus. This sign could be observed more clearly as the rotation angle increases. Therefore, if nonspecific abdominal pain is accompanied in cases with risk factors such as uterine fibroids and uterine anomalies, the condition of torsion is suggestive, checking the position of uterine fibroids or placenta compared to previous examinations by ultrasonography is needed. If there are these ultrasound findings or if patients complain of unexplained pain even with ultrasound, MRI could be a supportive tool to make sure any findings that might suggest torsion. However, unless it is observed with suspicion in clinical practice, it is nearly impossible to diagnose even with imaging tests.

The perinatal outcomes diagnosed with uterine torsion depends on the gestational age and degree of rotation angle. Uterine torsion greater than 180 degrees is extremely rare, and usually occurs between 45 degree and 180 degree.² If there are no maternal symptoms in uterine torsion or no fetal abnormalities, follow-up with closed monitoring is possible, but emergency laparotomy is required in other cases. In surgery after trying de-torsion of the uterus, low flap transverse cesarean section will be attempted, but if this is not possible, it is safe to perform a uterine incision after figuring out the anatomy in the pelvis.¹⁴ Also, if uterine torsion is diagnosed during surgery or extremely engorged vessels are found in the lower segment of the uterus before uterine incision except for placenta previa or accreta, it is recommended to confirm the correct anatomy by facilitating the round ligament position of the uterus before the incision. Or, as in this case, if uterine torsion is identified after delivery of the baby, the entire uterus should be taken out of the abdomen, and blood

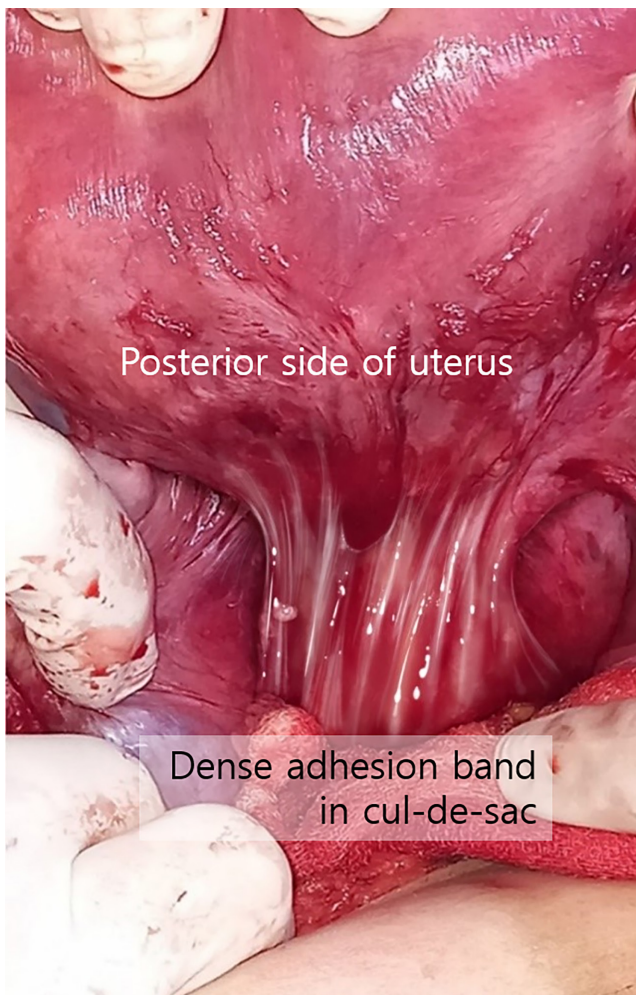


FIGURE 2 Posterior wall of uterus with dense pelvic adhesion in cul-de-sac.

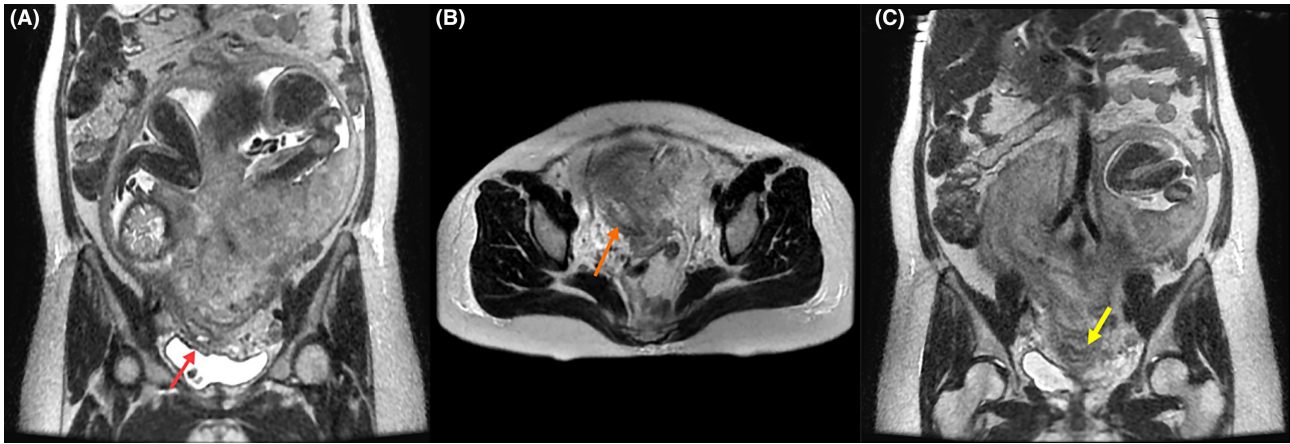


FIGURE 3 As the uterus twisted to the right, the vaginal stretch and cervix elongation are observed in coronal T2W1 (A: red arrow) and in transverse T2W1 prenatal MR image (B: orange arrow). The whirl sign of cervix by torsion in coronal T2W1 prenatal MR image is noted also. (C: yellow arrow).

vessels including ligaments, have to be checked whether bleeding or injury of adjacent organs. If the anatomy is not accurately identified during surgery, complications such as intraoperative hemorrhage, hysterectomy,¹⁵ or uterine necrosis³ may occur.

Uterine torsion during pregnancy is difficult to diagnose or complications that can cause adverse outcomes for both mother and fetus. In addition to the commonly known risk factors such as uterine fibroids or uterine anomalies, when pelvic adhesions are suspected, it is essential to keep in mind that there is a possibility of uterine torsion to get better perinatal results.

AUTHOR CONTRIBUTIONS

Seokyung Kim: Data curation; visualization; writing – original draft; writing – review and editing. **Hyun Ji Bae:** Visualization; writing – original draft; writing – review and editing. **Eun Ju Lee:** Resources; validation. **Dong Wook Kwak:** Supervision; visualization. **Jeong In Yang:** Supervision; validation; visualization.

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CONFLICT OF INTEREST STATEMENT

No conflict of interest to disclose by all authors.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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