Spontaneous reduction of an incarcerated gravid uterus after myomectomy in the second trimester

A case report

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Abstract
Rationale: During a normal pregnancy, in the 1st trimester uterus lies in pelvis and enlarges in size as the pregnancy advances. By 14 weeks of gestation, the gravid uterus transforms from a pelvis to an abdominal organ and a retroverted uterus will correct as the fundus rises out of the pelvis and falls forward to its normal anatomical position. If the uterus remains in the pelvic cavity after 14 weeks of gestation, it is referred to as an incarcerated uterus.

Patient concerns: A 31-year-old gravida 3 para 0 woman was admitted to our obstetrics unit at 20 weeks’ gestation with the complaint of severe persistent upper abdominal pain for over 12 hours.

Diagnosis and interventions: A diagnosis of fibroid degeneration was made through ultrasound and magnetic resonance imaging. The patient was hospitalized with conservative treatment. An abdominal myomectomy was performed at 22 weeks’ gestation because her condition had deteriorated. Incarcerated uterus was not suspected even at the time of myomectomy. But within 24 hours after myomectomy, diagnosis of incarcerated gravid uterus was made by ultrasound.

Outcomes: Incarcerated gravid uterus was found spontaneously reduced three weeks after myomectomy by ultrasound. A transverse Cesarean incision was performed at 32 weeks’ gestation. A male infant weighing 2120 g was delivered with Apgar scores of 10 and 10 at 1 and 5 minutes, respectively. Postoperative course was uneventful.

Lessons: Incarceration of the gravid uterus is relatively rare and it is difficult to diagnose. This patient’s findings suggested the incarceration of gravid uterus can be a transient abnormal position. The results of this study indicates that the incarcerated uterus when associated with fibroid is spontaneously reduced after removal of the fibroid.

Abbreviation: MRI = magnetic resonance imaging.
Keywords: gravid uterus, incarcerated uterus, myomectomy, second trimester, spontaneous reduction

1. Introduction

Incarceration of the gravid uterus is a relatively rare but potentially devastating complication of pregnancy if not timely recognized and treated. There are several risk factors predisposing to an incarceration of the gravid uterus: retroverted uterus in the 1st trimester, endometriosis, pelvic adhesions, pelvic inflammatory disease, previous abdominal or pelvic surgery, leiomyomas, uterus anomalies, uterine prolapse, deep sacral concavity with an overlying sacral promontory, and uterine incarceration in a prior pregnancy. At the same time incarceration of gravid uterus is considered to be a transient abnormal position. We herein reported a case of incarcerated uterus that resulted from a huge fibroid at 20 weeks’ gestation. The incarceration was not found before and during myomectomy and hence was not corrected during myomectomy, but was spontaneously reduced after myomectomy. The whole clinical course and ultrasound and magnetic resonance imaging findings are recorded.

2. Case report

A 31-year-old gravida 3 para 0 woman was admitted to our obstetrics unit at 20 weeks’ gestation with the complaint of severe persistent upper abdominal pain for over 12 hours. The fundal height was 33 cm, and the abdominal circumference was 105 cm. There was significant tenderness observed in the upper abdomen. Ultrasound showed fetal biometry, where the placenta and the amniotic fluid volume were normal and a subserous fibroid on the anterior wall showed a measurement of 20 × 22 × 14 cm. The cervix could not be visualized on transabdominal and transvaginal sonography. Magnetic resonance imaging (MRI) showed a retroverted uterus with a fibroid on the anterior wall. The
imaging findings demonstrated that the cervix was elongated and anteriorly displaced behind the pubic symphysis and the fetal head invaded in the pouch of Douglas (Fig. 1). Unfortunately, incarceration of the gravid uterus was not suspected. A diagnosis of probable fibroid degeneration was made. The patient was hospitalized with conservative treatment including intravenous sulperazone 1.5 g q8h for 10 days and indometacin capsules once. But her symptoms were aggravated. Visual Analogue Score (VAS) was 8 to 9. She had poor appetite and astiction, awoke from sleep several times during night and lost 4.5 kgs weight. After fully informing the patient and her families regarding the risk of miscarriage, the patient strongly preferred myomectomy due to unbearable pain. An abdominal myomectomy was carefully performed through a high vertical incision at 22 weeks' gestation. Upon entering the abdominal cavity, a huge fibroid measuring 30 × 20 × 15 cm was encountered, and then myomectomy was carefully performed. Red degeneration of myoma was confirmed. Unfortunately, incarceration was not found again. The patient’s symptoms were resolved after undergoing myomectomy. A postoperative ultrasound was performed within 24 hours. This time with a fully filled bladder ultrasound showed an extremely elongated cervix displaced anteriorly and superiorly; marked uterine retroversion; and the fetal head was in the pouch of Douglas (Fig. 2). Then the diagnosis of a posterior uterine incarceration was raised by the sonographer. The postoperative course was uneventful and the patient was discharged. Furthermore, ultrasound examination was performed at 25 weeks. The results showed a retroverted uterus returned to forward position and the cervix was clearly detectable (Fig. 3). At 30 weeks' gestation, the patient was admitted to our hospital with irregular contractions. The MRI showed that the uterine fundus had moved from the pouch of Douglas to the abdominal cavity and uterine wall appeared normal (Fig. 4). A transverse Cesarean incision was performed at 32 weeks’ gestation owing to increasing irregular contractions to prevent rupture of the uterus. A male infant weighing 2120 g was delivered with Apgar scores of 10 and 10 at 1 and 5 minutes, respectively. Her postoperative course was uneventful.

3. Discussion
During a normal pregnancy, the uterus lies in the pelvis in the 1st trimester, and the gravid uterus transforms from a pelvis to an abdominal organ and a retroverted uterus will correct as the fundus rises out of the pelvis and falls forward by 14 weeks of gestation. If the uterus remains in the pelvic cavity after 14 weeks of gestation, it is referred as an incarcerated uterus. There are several risk factors predisposing to an incarceration, such as retroverted uterus, endometriosis, pelvic adhesion, pelvic inflammatory disease, previous abdominal or pelvic surgery, leiomyomas, uterine anomalies, uterine prolapse, deep sacral concavity with an overlying sacral promontory, and uterine incarceration in...
her previous pregnancy.\textsuperscript{[1–3]} In the presented case, the mechanism involved with gravid uterus that was unable to move out of pelvis might be due to: Firstly, huge fibroid occupying the abdominal cavity; secondly, fibroid oppressing the uterus; thirdly, huge fibroid that affects the pelvic entrance. It is recommended to restore the uterine polarity earlier in pregnancy, but reduction is not recommended after 20 weeks’ gestation unless the patient is significantly symptomatic.\textsuperscript{[4,5]} In the current case, myomectomy was performed owing to unbearable pain. Incarcerated uterus was not corrected at the time of myomectomy as the clinicians were unaware of the issue. An interesting phenomenon appeared after myomectomy, the incarcerated uterus was spontaneously resolved within 3 weeks. According to a report,\textsuperscript{[6]} an incarcerated gravid uterus may spontaneously get corrected in special conditions of incarceration caused by uterine fibroids only in the absence of other facts such as adhesion. We thought that the huge fibroid was the only reason to cause incarceration for this special case, and when the fibroid was removed, the abdominal

Figure 2. Ultrasound imaging at 22 weeks’ gestation within 24 hours postoperation: (A) an extremely elongated cervix displaced anteriorly and superiorly; (B) marked uterine retroversion; (C) the fetal head was in the pouch of Douglas.

Figure 3. Ultrasound imaging at 25 weeks’ gestation (trans perinaeum): (A) the uterus was shown at normal position upon the cervix; (B) the cervix was clearly detectable.
cavity became empty. This in turn did not limit the uterus and affect the pelvic entrance, allowing the incarcerated gravid uterus spontaneously correct to its normal position. The whole treatment process and special phenomenon was rarely reported. In conclusion, incarceration of the gravid uterus is a relatively rare and it is difficult to diagnosis. At the same time the incarceration of gravid uterus is a transient abnormal position. The incarcerated uterus when associated with fibroid is probably spontaneously reduced after removing the fibroid.

**Author contributions**

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