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Case Report

Uterine rupture at 33rd week of gestation after laparoscopic myomectomy with signs of fetal distress. A case report and review of literature

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ABSTRACT

Objective: We describe a case of uterine rupture (UR) during pregnancy after laparoscopic myomectomy (LM) and discuss the risk factors of UR.
Case report: A 37-year-old woman with multiple myomas underwent laparoscopic myomectomy. Subserosal and intramural myomas were enucleated, and the myometrial wounds were repaired with single-layer suturing. Sixteen months after the operation, the patient conceived. At 33 weeks of gestation, emergency cesarean section was performed for the indication of fetal distress. A male neonate was delivered without asphyxia. During cesarean section, surgeons identified a 2 × 3 cm myometrial defect at one of the myomectomy sites, and diagnosed incomplete UR. The myometrial defect was repaired with debridement and suturing.
Conclusion: Based on the literature review, the risk of UR during pregnancy after LM is estimated to be less than 1% when all the surgical procedures have been performed appropriately. Myomectomy should be performed with careful consideration by surgeons who have good knowledge of the wound healing process in the myometrium.

Introduction

Laparoscopic myomectomy (LM) has become a common surgical procedure for treating symptomatic leiomyoma. LM is a preferable alternative to abdominal myomectomy (AM); it clearly reduces postoperative pain, shortens hospital stay, allows a quicker return to normal activity, and helps prevent postoperative adhesions. However, it has been suggested that LM is associated with longer operative times and increased risk of uterine rupture (UR) during subsequent pregnancies.

Although UR during pregnancy is rare, it can be a catastrophic obstetric complication associated with a high rate of maternal and fetal morbidity and mortality [1]. The most important risk factor affecting UR during pregnancy is a uterine scar created by previous uterine surgery such as cesarean section, myomectomy, adenomyomectomy, hysteroscopic resection, or surgery to treat ectopic pregnancy, but other factors have also been reported, such as congenital uterine anomalies, abnormal placentation, and induction of labor. This case report was exempt from the institutional review board at our institute.

Case

A 37-year-old primigravida was referred to our hospital because she had a uterine myoma (10 cm in diameter) with symptoms of dysmenorrhea and hypermenorrhea. Transvaginal ultrasonography and magnetic resonance imaging (MRI) revealed 4 uterine myomas: a subserosal myoma (10 cm in diameter) with a narrow stalk originating from the uterine fundus, a subserosal myoma (4 cm in diameter) originating from the center of the anterior uterine body, an intramural myoma (3 cm in diameter) located on the right side of the anterior uterine body, and an intramural myoma (1 cm in diameter) located in the center of the posterior uterine body (Fig. 1). For preoperative management, the patient received 4 months of subcutaneous gonadotropin-releasing hormone analogue therapy (Leuplin, Takeda, Tokyo, Japan, 1.88 μg), and the size of all myomas were decreased (8.5 cm, 3 cm, 2.5 cm, 0.8 cm in diameter respectively) at the time of operation.

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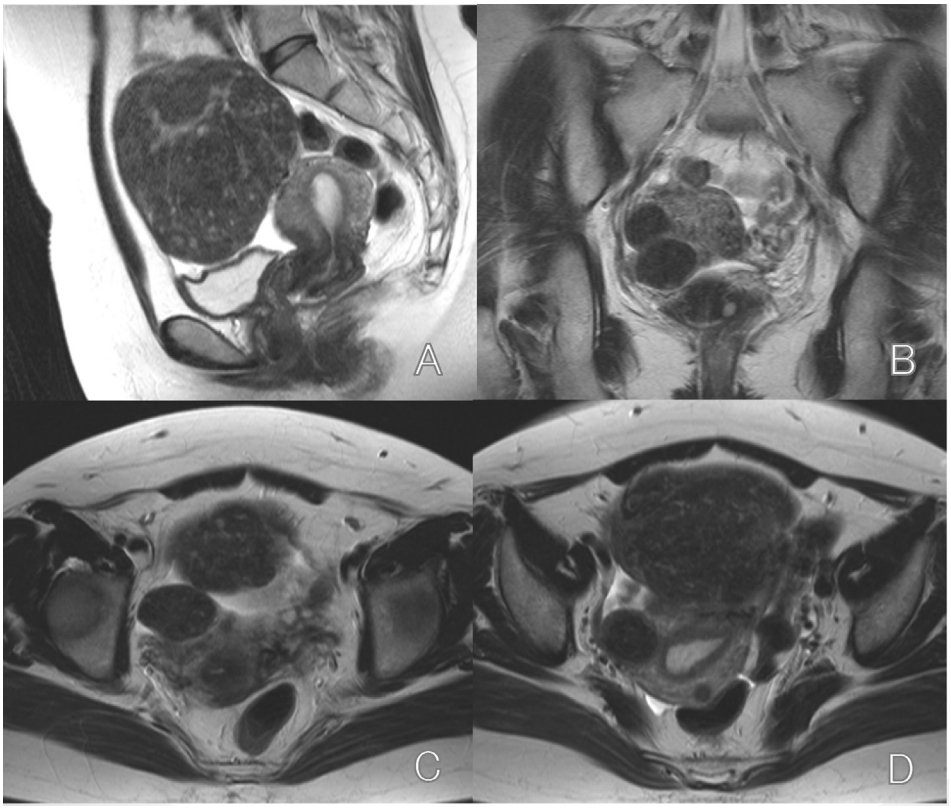

Fig. 1. Magnetic resonance imaging (MRI) of uterine myomas. MRI revealed 4 uterine myomas: 1) a subserosal myoma (10 cm in diameter) arising from the uterine fundus (A), 2) a subserosal myoma (3.5 cm in diameter) arising from the center of the anterior wall (B, C), 3) an intramural myoma (2.5 cm in diameter) located on the right side of the anterior wall (B, D), and 4) a small intramural myoma in the posterior uterine body (D).

Intraoperatively, the 2 subserosal myomas were enucleated by cutting their stalks with an ultrasonic scalpel (Harmonic Ace, Johnson & Johnson, New Jersey, USA) (Fig. 2A–D). Next, the two intramural myomas were enucleated by incising the uterine muscle layers above the myomas longitudinally with monopolar electrocautery. They were removed with gentle traction and rotational force by laparoscopic forceps with assistance from the ultrasonic scalpel inserted into the space between the myoma and the uterine muscle layer. All incisions in the myometrium were repaired with single-layered z-sutures with 0 Vicryl (Johnson & Johnson, New Jersey, USA) (Fig. 2E–I).

Sixteen months after the operation, the patient conceived spontaneously. At 32 weeks gestation, she was admitted to our hospital with a diagnosis of threatened premature labor. She had symptoms of frequent uterine contraction, irregular abdominal pain, and shortened cervical length of 10 mm. Cardiotocographic monitoring (CTG) revealed a reassuring fetal status pattern (Fig. 3A). No abnormal findings were identified with fetal ultrasonography, including amniotic fluid volume and placentation. Uterine contractions were well controlled after admission with continuous intravenous administration of ritodrine hydrochloride. Approximately 6 days after admission, CTG revealed occasional variable decelerations with less variability. At 33 weeks gestation, CTG revealed loss of variability with frequent variable decelerations (Fig. 3B) and decreased amniotic fluid volume (AFI, 2 cm). We decided to transport the patient to another hospital for further management of the pregnancy and intensive care for the neonate. Due to prolonged fetal bradycardia just before transport (Fig. 3C), emergency cesarean section was performed immediately after arrival at the other hospital. A male neonate weighting 1679 g was delivered. He appeared non-asphyxiated, and his Apgar scores at 1 and 5 min were 8 and 9, respectively. Umbilical arterial gas analysis indicated no acidosis (pH, 7.318) and respiratory distress syndrome did not occur. After closure of the uterine cesarean incision, the surgeon became aware of a myometrial defect 2 × 3 cm in size that reached the endometrium on the anterior uterine wall near the right uterine horn (Fig. 4A and B). He diagnosed incomplete UR at the site of a previous LM scar. Debridement of the lesion and 2-layer myometrial suturing was performed (Fig. 4C). The pathological diagnosis of the removed myometrial specimen was focal necrosis of myometrium. The mother and neonate had an uneventful puerperal and neonatal course, respectively.

Discussion

Uterine leiomyomas are the most common benign pelvic tumors in women of reproductive age. Although they are often asymptomatic, sometimes they cause menorrhagia, dysmenorrhea, and pelvic pressure. They might also impair fertility through several mechanisms [2]. For patients who wish to preserve fertility, myomectomy is the preferred surgical procedure over hysterectomy, although some other uterus-preserving approaches are available, such as uterine artery embolization, magnetic resonance-guided focused ultrasound, and medical treatment including GnRH analogues or sex steroids [2,3].

LM is a recently introduced surgical technique used to treat uterine myomas. LM is an excellent alternative to AM. Compared with AM, LM is clearly associated with less blood loss, reduced postoperative pain, shorter hospital stay, and quicker return to normal activity. Pregnancy rates and spontaneous abortion rates are comparable to AM. LM also prevents postoperative adhesions, which is particularly advantageous when pregnancy is desired [2,4,5].