

## **Recurrent spontaneous third-trimester uterine rupture after hysteroscopic resection of myoma: a case report**

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### **Abstract**

*Uterine rupture is a catastrophic obstetrical emergency with serious effects on both women and fetuses. Operative hysteroscopic procedures can add more risk factor for occurrence of this tragedy. Here, we report a case of spontaneous recurrent rupture uterus at 33 weeks of gestation in a 32 years old woman with previous history of hysteroscopic resection of submucous myoma after development of acute abdomen. Uterine repair of fundal rupture was performed through emergency exploratory laparotomy. Surgeons should explain to their patients the hazards of probable risk of recurrent and multiple uterine rupture in the future pregnancy and to document this discussion in the medical records before proceeding to operative hysteroscopic procedures.*

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### **Introduction**

Rupture of the uterus during pregnancy is a terrible rare condition that results in maternal and fetal morbidity and mortality.<sup>1</sup> The uterine rupture rate is variable depending on the presence of a uterine scar. It ranges between 0.03–0.08% for females with an unscarred uterus and 0.3-1.7% for those with a previous uterine scar.<sup>2,3</sup>

Uterine myomas (also known as fibroids) are the most common benign solid tumors found in the female genital tract occurring in 20-25% of women of reproductive age.<sup>4</sup> Uterine myomas may interfere with fertility, especially submucous fibroids which are reported to have the most negative effects on pregnancy rates.<sup>5</sup> To avoid the hazards of open surgery, operative hysteroscopy has become the standard treatment for submucous fibroids.<sup>6</sup> Complications of operative hysteroscopy extensively

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differs depending on the operative procedure, while surgical complications, including uterine perforation remains low (range 1-2.7%).<sup>7</sup> However, obstetrical outcome should be considered with caution.

Pregnancy outcome after conservative management of uterine rupture has been reported only by case reports and small case series.<sup>8,9</sup> Recurrent uterine ruptures are associated with high maternal and perinatal morbidity. In spite of repair uterine rupture is possible, and recurrences are frequent, especially after longitudinal upper segment ruptures or short interval between repair and subsequent pregnancy.<sup>10</sup>

Here, we present a rare case of a spontaneous second recurrent uterine rupture in the 33rd week of gestation in a woman had previously undergone hysteroscopic resection of submucous myoma.

### **Case presentation**

A 32 years old female, gravida 2 para 1, with no living children, presented to the emergency department of Assiut Women's Health Hospital complaining of acute onset of severe abdominal pain with absent fetal movement for 3 hours. She was pregnant at 33 weeks gestation based on early ultrasound. She was currently married for 10 years with history of 7 years primary infertility. She gave a history of hysteroscopic myomectomy 4 years ago, and then 1 year later she got her first pregnancy spontaneously.

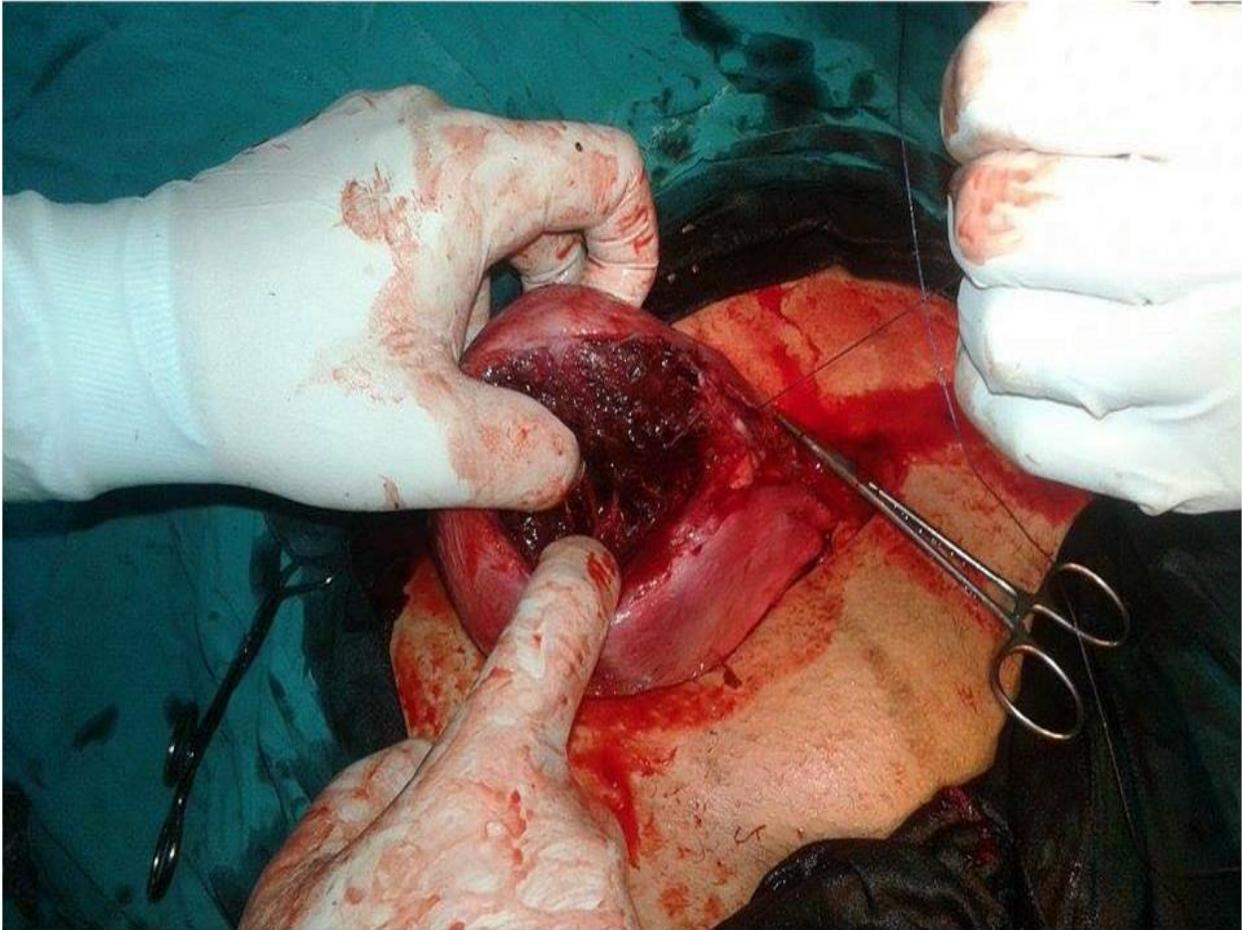
Her operative reports confirmed that she had a fundal submucous myoma 4 X 4 cm removed by resectoscopic excision by slicing using monopolar resectoscope. No intraoperative or postoperative complications were noted. The procedure was carried out without laparoscopic assistance. After that the patient experienced uterine rupture in the 29th week of her first pregnancy resulting in stillbirth. Laparotomy was performed and repair of a large transverse uterine defect extending between both cornu by non-absorbable sutures in three layers was done.

On physical examination, the patient was conscious, her blood pressure was 90/50 mmHg, and pulse 120 beats per minute. Generalized abdominal tenderness and rebounding in the lower abdomen were observed on abdominal examination. There was no vaginal bleeding and the cervix was closed. Ultrasound examination showed an empty uterus with single non-viable fetus present outside the uterine cavity. Intraperitoneal fluid collection was noted with no adnexal abnormalities. Preoperative hemoglobin level was 8.3 gm/dl and coagulation profile was normal.

Based on previous findings, diagnosis of recurrent ruptured uterus was suspected. Emergency laparotomy was done under general anesthesia after counseling about her current condition and taking an informed consent. A dead fetus was found completely extruded from the uterine cavity through a large fundal defect (nearly 7x7 cm) with irregular actively bleeding edges (Figure 1). The abdominal cavity was filled with about 1000 cc hemoperitoneum. The uterine defect was repaired in three-

layers using non-absorbable sutures, then, the abdomen was closed in layers

after normal saline lavage.



**Figure 1: Ruptured uterus; the uterus shows a large fundal defect 7 X 7 cm.**

The patient received 2 units of packed RBCs and 2 units of fresh frozen plasma during the surgery. Postoperative hemoglobin level was 10.1 gm/dl. The patient was discharged on day 4 after the operation with no complaint. She was counselled about the use of effective contraceptive method for at least 2 years. We recommended that in subsequent pregnancies she be hospitalized at 28 weeks with regular monitoring with ultrasonography and fetal monitoring. Once fetal lung maturity

is confirmed, delivery should be accomplished to avoid recurrence of this complication.

### **Discussion**

In 1976, the first reported hysteroscopic myomectomy was performed, by Amin and Neuwirth using a monopolar current and urologic resectoscope.<sup>11</sup> Thanks to advances in instruments during the last two decades, hysteroscopic myomectomy represents the standard surgical technique for the treatment of

intrauterine myoma.<sup>12</sup>

Ruptured uterus can be considered as both an early and late complication of hysteroscopic myomectomy. Deep hysteroscopic incisions are the most common predisposing factors for early uterine rupture.<sup>13</sup> Synchronous use of ultrasonography or laparoscopy may prevent this acute complication. Additionally, electrosurgery is considered an associated risk factor. It increases the risk of thermal myometrial vascular damage and weakening of the tissue that leads to consequent uterine rupture.<sup>14</sup> The monopolar electric current diffuses in the myometrium and can lead to extensive deep tissue necrosis in the area of the resection.

Uterine rupture also may occur in a subsequent pregnancy after unrecognized perforation during entry of the hysteroscope. So, when this occurs, it is important that the surgeon explains to the patient the hazard of uterine rupture in the subsequent pregnancy and to document this discussion in the medical records.

Previous uterine surgery is the most important risk factor for uterine rupture, especially in the third trimester.<sup>15</sup> It can occur following cesarean section or upper uterine segment surgeries such as hysterotomy, classical cesarean section and previous repair of ruptured uterus, all of which carry an increased risk of uterine rupture during next pregnancy.<sup>16</sup>

Uterine rupture usually happens earlier than the age of rupture in the previous pregnancy. So, a history of uterine rupture should increase the clinician's suspicion of earlier uterine rupture

recurrence. This progression suggests that the scar tissue formation after surgical repair of each rupture is weaker than that of the previous repair. However, in our case the first uterine rupture occurred spontaneously at 29 weeks of gestation and this rupture occurred also spontaneously and later in gestation at 33 weeks at the same site of myoma resection. This could be attributed mostly to unrecognized and unrepaired uterine perforation during hysteroscopic myomectomy that leads to early rupture, but after first repair of the defect, the scar became stronger to stand 4 weeks more till spontaneously ruptured again at 33 weeks. To the best of our knowledge, this is the first case to report a recurrent uterine rupture during pregnancy after hysteroscopic myomectomy.

There is no agreement on the safe time between hysteroscopic myomectomy and a subsequent pregnancy.<sup>17</sup> In our case, the first rupture occurred 1 year after the procedure, and the subsequent rupture occurred at 2-years interval.

Abdominal exploration is the only key for successful management of uterine rupture. It should be managed in a tertiary level hospital, by seniors. Repair should be in full thickness and with proper suture materials. An effective method of contraception should be used for at least one year after uterine repair<sup>18</sup> in addition to close monitoring in the next pregnancies. Although the risk of recurrent uterine rupture in subsequent pregnancies is 4-19%, repair was indicated in our case as she had no living children.

The literature data about the pregnancy outcomes in women after repair of

uterine rupture is just derived from small case series. Usta et al., 2007 reported pregnancy outcome in 12 women out of 37 who became pregnant again after uterine repair.<sup>8</sup> The recurrence rate was 33%. Additionally, Fox et al., 2014 reported in a case series of 44 women a recurrence rate of only 6.7% in women with history of prior uterine rupture or dehiscence.<sup>9</sup>

This case emphasizes three important clinical points. Firstly, ruptured uterus should be anticipated in any woman with a history of hysteroscopic uterine surgery as the possibility of an unnoticed perforation occurs during the procedure. Regular antenatal visits at a tertiary hospital should be instituted in their follow-up of future pregnancies.

Secondly, it is necessary to inform the patients about the potential risk of uterine rupture during pregnancy before performing any uterine surgery. If the patient suffered from abdominal pain, uterine rupture must be suspected and recurrent uterine rupture after hysteroscopic myomectomy must be in mind.

Finally, the late complications of operative hysteroscopy caused by myometrial damage during the surgery can cause disastrous consequences during a subsequent pregnancy. These long-term problems should lead the clinicians to select myomectomy patients carefully to minimize the possibility of unnecessary myometrial damage.

In our view, intraoperative imaging should be engaged for hysteroscopic procedures and this may rule out the need for simultaneous laparoscopy

which constitutes an extra risk for the patient and prolongs the duration of the surgery. Currently, there is no conformity on the standard follow-up protocol that decreases maternal and perinatal adverse outcomes among those patients. For this reason, patients must be well-informed about the symptoms of uterine rupture during their pregnancy and must be hospitalized, and clinicians must regard the possibility. Finally, most ruptures seem to occur in the third trimester of pregnancy. Further research is needed to determine whether an adapted strategy is needed in the third trimester of pregnancy in women who have undergone myomectomy.

## **Conclusions**

In conclusion, we want to draw gynecologists' attention that deal with patients with previous hysteroscopic myomectomy that they should be aware of the potential risks of uterine rupture during the subsequent pregnancy until a sensitive predictive method is revealed. Ruptured uterus should be suspected after any uterine surgery in pregnant women who present with acute abdomen. If gynecologists are planning to perform a surgery for treating fibroid, they should carefully choose the suitable modality of surgery with the least postoperative consequences in addition to obtaining more detailed informed consent before intervention.

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