

UTERINE RUPTURE DURING CESAREAN SECTION IN PATIENT WITH PREVIOUS EXTENSIVE LAPAROSCOPIC MYOMECTOMY

Sergei Slavov

University Hospital of Obstetrics and Gynecology “Maichin Dom”, Sofia, Bulgaria, Department of Obstetrics and Gynecology, Medical University, Sofia, Bulgaria, sergeislavov66@gmail.com

ORCID ID: 0000-0002-7438-0144

Svetlozar Slavov

University Hospital of Obstetrics and Gynecology “Maichin Dom”, Sofia, Bulgaria, Department of Obstetrics and Gynecology, Medical University, Sofia, Bulgaria, svetlozarslavov@yahoo.com

ORCID ID: 0009-0003-0192-239X

Abstract: Uterine rupture following myomectomy is an uncommon but potentially life-threatening obstetric complication associated with severe maternal and fetal morbidity. Although the overall incidence is estimated to be below 1%, rupture after myomectomy differs from rupture of a previous cesarean scar by its tendency to occur before the onset of labor and, in some cases, to remain clinically silent. Several surgical factors have been implicated in impaired uterine scar healing, including removal of large intramural fibroids, entry into the endometrial cavity, extensive use of electrosurgery, and inadequate multilayer myometrial closure.

We report the case of a 42-year-old primigravid woman who conceived through in vitro fertilization using a donor oocyte following previous laparoscopic myomectomy for multiple uterine fibroids, including two large intramural lesions approximately 6 cm in diameter. Pregnancy was additionally complicated by prothrombin-associated thrombophilia and cervical shortening requiring cervical pessary placement. At 35 weeks of gestation, the patient was admitted with preterm premature rupture of membranes and mild irregular uterine contractions. She was hemodynamically stable, asymptomatic, and cardiotocography demonstrated a reassuring fetal heart rate pattern. Cesarean delivery was performed because of the obstetric findings and the history of previous uterine surgery. Following delivery of a healthy male infant weighing 3040 g, routine uterine exploration raised suspicion of a uterine defect. Further inspection revealed a large full-thickness fundal rupture measuring approximately 7–8 cm, covered by membranous omental adhesions. The defect did not show active bleeding and was characterized by fibrous and necrotic edges, suggesting with high probability a process that began before the onset of labor. Surgical repair was successfully performed, and both maternal and neonatal outcomes were favorable.

This case demonstrates that extensive uterine rupture after laparoscopic myomectomy may remain completely asymptomatic and be diagnosed only incidentally during cesarean delivery. Multiple myomectomies, removal of large intramural fibroids, probable entry into the uterine cavity, and fundal localization likely contributed to scar failure. Clinicians should maintain a high index of suspicion in pregnancies following complex myomectomy, even in the absence of classical symptoms of uterine rupture.

Keywords: Uterine rupture, cesarean section, laparoscopic myomectomy

1. INTRODUCTION

Uterine fibroids are among the most common benign gynecological tumors and are a common indication for surgical treatment to preserve fertility in women of reproductive age. Myomectomy remains the preferred treatment option for selected patients who wish to preserve their reproductive potential, and the widespread use of minimally invasive techniques has led to an increasing number of pregnancies after laparoscopic procedures. Although pregnancy outcomes after myomectomy are generally favorable, concerns remain regarding the integrity of the uterine wall and the condition of the uterine scar during subsequent pregnancies. Uterine rupture is a rare event, but when it occurs, it can be associated with serious complications for the mother and fetus. The clinical presentation is often variable, ranging from acute symptoms and fetal compromise to completely asymptomatic cases discovered incidentally during surgery. As more women delay childbirth and undergo surgical treatment for fibroids before pregnancy, recognition of unusual manifestations of uterine rupture is becoming increasingly important. The presented case describes a large, silent fundal rupture discovered incidentally during cesarean section in a woman with a history of extensive laparoscopic myomectomy.

2. CASE PRESENTATION

We report the case of a 42-year-old primigravid woman who conceived through in vitro fertilization using a donor oocyte. Her medical history was notable for a previous laparoscopic myomectomy performed several years earlier, during which multiple subserosal fibroids and two large intramural fibroids measuring approximately 6 cm in diameter were removed. Prior to IVF treatment, she had undergone two diagnostic hysteroscopies. The patient was also known to have prothrombin-associated thrombophilia and received prophylactic low-molecular-weight heparin throughout pregnancy. Due to progressive cervical shortening, a

cervical pessary was placed during the second trimester. At 35 weeks of gestation, the patient was admitted to Maichin Dom University Hospital with preterm premature rupture of membranes and mild irregular uterine contractions. Following removal of the cervical pessary, cervical dilatation of approximately 3 cm was noted. Given the obstetric findings and the patient's history of previous uterine surgery, a cesarean section was performed. On admission, the patient was hemodynamically stable and reported no abdominal pain. No vaginal bleeding was observed. Cardiotocographic monitoring demonstrated a reassuring fetal heart rate pattern. The abdomen was entered through a Pfannenstiel incision. A lower uterine segment incision was performed and extended laterally to facilitate delivery. A live male infant weighing 3040 g was delivered with good neonatal adaptation. The placenta was delivered intact and without apparent abnormalities. During routine manual exploration of the uterine cavity, a defect in the uterine fundus was suspected, prompting exteriorization of the uterus for further evaluation. Intraoperative inspection revealed membranous omental adhesions covering a large full-thickness rupture located at the uterine fundus. The defect measured approximately 7–8 cm in length and was characterized by the absence of active bleeding and the presence of necrotic fibrotic margins (Figure.1). After excision and refreshing of the wound edges, the defect was repaired using interrupted sutures. Estimated intraoperative blood loss was approximately 500 ml. No blood transfusion was required. The postoperative course was uneventful, and both mother and newborn were discharged in good condition.

Figure.1 Rupture located at the fundus of the uterus



Source: authors' research

3. DISCUSSION

Uterine rupture following myomectomy remains one of the most dangerous complications in subsequent pregnancies due to its association with severe maternal and/or fetal outcomes, including maternal hemorrhage, fetal hypoxia, need for emergency hysterectomy, and perinatal mortality. Although the incidence of this complication is considered low, typically ranging between 0.5% and 1%, its importance remains significant due to the potentially catastrophic consequences that can occur. Unlike rupture of a cesarean section scar, which most often occurs during labor, uterine rupture following myomectomy often develops before the onset of labor and may present with nonspecific symptoms or even remain clinically asymptomatic. The available literature indicates that the risk of rupture is determined not only by the presence of a uterine scar but also by the characteristics of the previous surgical procedure. Several factors have been suggested as contributing to impaired scar healing, including removal of large intramural fibroids, multiple uterine incisions, entry into the endometrial cavity, excessive use of electrosurgery for hemostasis, inadequate multi-layered myometrial closure, postoperative hematoma formation, and extensive tissue devascularization. Recent studies have shown that larger fibroid size and previous uterine surgery are among the most important predictors of rupture in subsequent pregnancies. However, there is no definitive risk factor that can reliably predict this complication. Particular attention should be paid to cases of laparoscopic myomectomy. Although laparoscopic surgery is associated with reduced blood loss, shorter hospital stay, less postoperative pain, and fewer adhesions compared with laparotomy, there are concerns about the quality of uterine wall reconstruction. Earlier studies suggested that extensive bipolar coagulation and technically complex intracorporeal suturing could potentially compromise tissue healing and increase the risk of subsequent rupture. More recent studies have shown that when meticulous

multi-layered closure is performed, reproductive outcomes after laparoscopic myomectomy are generally favorable and the absolute risk of rupture remains low. However, the available evidence remains heterogeneous, and many published studies lack detailed information on myoma characteristics and surgical technique.

The present case illustrates several of the risk factors repeatedly identified in the literature. The patient underwent laparoscopic removal of multiple myomas, including two large intramural fibroids measuring approximately 6 cm. One of these lesions was located in the uterine fundus, corresponding exactly to the site of rupture found during cesarean section. Furthermore, based on the operative history and subsequent hysteroscopic evaluations, uterine cavity entry seems highly likely. Deep intramural dissection combined with cavity entry inevitably requires extensive myometrial reconstruction and may predispose to incomplete restoration of uterine wall architecture. Performing multiple myomectomies further increases the risk of scar defect.

It is important to note that the present case lacks the classic clinical manifestations of uterine rupture. The patient presented at 35 weeks of gestation with premature rupture of membranes and mild irregular contractions. There was no abdominal pain, vaginal bleeding, fetal distress, or maternal hemodynamic instability. Cardiotocography remained reassuring until delivery. The diagnosis was made only at the time of cesarean section, when a large fundal defect measuring approximately 7–8 cm was identified. This presentation supports the concept of silent or controlled uterine rupture, a phenomenon that is increasingly being recognized in women with prior myometrial surgery. Intraoperative findings provide further clues as to the timing and mechanism of rupture. The lack of active bleeding, the presence of necrotic and fibrous margins, and the discovery of membranous omental adhesions covering the defect suggest that the rupture probably occurred some time before admission to hospital and was not an acute intrapartum event. Another important aspect is advanced maternal age and conception through assisted reproductive technologies. Although neither factor has been definitively associated with uterine rupture, pregnancies achieved after infertility treatment are more common in women with a more complex gynecological history and a higher incidence of previous uterine surgery. Therefore, these pregnancies often represent a population requiring individualized monitoring and birth planning.

The present case highlights the limitations of current methods for predicting uterine rupture after myomectomy. Despite the increasing interest in ultrasound assessment of myometrial scar thickness, no validated sonographic criteria have been established for women after myomectomy. As a result, clinical management continues to rely heavily on surgical history. In women with previous removal of large deep intramural fibroids, especially when fundal location or cavity invasion is documented or suspected, clinicians should maintain a heightened level of suspicion throughout pregnancy, even in the absence of typical symptoms.

4. CONCLUSION

This case demonstrates that extensive uterine rupture after laparoscopic myomectomy may remain completely asymptomatic and can be discovered only at cesarean delivery. The combination of multiple myomectomies, removal of large intramural fibroids, probable entry into the uterine cavity, and fundal localization likely contributed to scar failure in this patient. The favorable maternal and neonatal outcomes observed in the present case should not obscure the potentially life-threatening nature of this complication and underscore the importance of careful obstetric management in pregnancies following complex laparoscopic myomectomy.

REFERENCES

- Balulescu et al. (2024). The Impact of Laparoscopic Myomectomy on Pregnancy Outcomes: A Systematic Review. *J Pers Med.*, 14(4):340.
- Brenta, A., Cesari, E., Bonato, S., & Savasi, V.M. (2026). Spontaneous uterine rupture after myomectomy in patients during pregnancy: Clinical cases in a single university center. *Int J Gynecol Obstet.*, 173:24-34.
- Fu, et al. (2025). Risk factors for pregnancy-related uterine rupture following laparoscopic myomectomy: A systematic review and meta-analysis. *Medicine (Baltimore).*, 104(40):e44363.
- Furukawa, et al. (2026). Perinatal complications and time to subsequent pregnancy after open, laparoscopic, and hysteroscopic myomectomy: a retrospective cohort study. *BMC Pregnancy Childbirth.*, 26(1):115.
- Gambacorti-Passerini, Z., Gimovsky, A.C., Locatelli, A., & Berghella, V. (2016). Trial of labor after myomectomy and uterine rupture: a systematic review. *Acta Obstet Gynecol Scand.*, 95(7):724-34.
- Gil et al. (2020). Risk of uterine rupture after myomectomy by laparoscopy or laparotomy. *J Gynecol Obstet Hum Reprod.*, 49(8):101843.
- Ginod, P., Badeghiesh, A., Baghlaf, H., & Dahan, M.H. (2025). Pregnancy and delivery outcomes after abdominal vs. laparoscopic myomectomy: an evaluation of an American population database. *Fertil Steril.*, 123(1):164-172.
- Komatsu, H., Taniguchi, F., & Harada, T. (2023). Impact of myomectomy on the obstetric complications: A large cohort study in Japan. *Int J Gynaecol Obstet.*, 162(3):977-982.
- Koo et al. (2015). Pregnancy Outcomes and Risk Factors for Uterine Rupture After Laparoscopic Myomectomy: A Single-Center Experience and Literature Review. *J Minim Invasive Gynecol.*, 22(6):1022-8.

- Morales-Hernández et al. (2025). Perinatal Outcomes in Mexican Women with a History of Myomectomy: A Retrospective Cohort Study. *J Clin Med.*,14(21):7677.
- Sarli et al. (2025). Laparoscopic Myomectomy and Pregnancy Outcomes: A Narrative Review. *Cureus*,17(7):e87268.