



CASE REPORT

Optimal Outcomes Following Combined Cesarean-Myomectomy for High-Risk Intramural Leiomyoma: A Case Report

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Abstract

Background: Uterine leiomyomas during pregnancy pose management challenges, particularly when large or located near the cervix. FIGO Type 5 myomas are intramural and cervix-adjacent, potentially affecting cervical integrity and labor. Although cesarean myomectomy has traditionally been avoided because of hemorrhage risk, emerging evidence supports its feasibility in selected patients. This report presents a refined approach to managing a high-risk intramural myoma during cesarean delivery.

Case Presentation: A 35-year-old multigravida (G3P2) with two previous cesarean sections was diagnosed at 13 weeks of gestation with a posterior intramural myoma measuring 8.4 × 5.9 × 8.85 cm (FIGO Type 5). Transvaginal ultrasound showed a short cervix (2.1 cm) and marked intralesional vascularity. Progesterone therapy and close monitoring improved cervical length to 2.53 cm. At 39 weeks, elective cesarean delivery with concurrent myomectomy was performed. Circumferential basal ligation of the myoma pedicle achieved rapid hemostasis before enucleation and layered uterine repair. A 223-g benign leiomyoma was removed with minimal blood loss.

Discussion: This case demonstrates that careful surgical planning, effective hemostatic control, and multidisciplinary preparedness are essential for successful cesarean myomectomy. Basal ligation effectively minimized intraoperative bleeding while preserving uterine integrity. This approach supports current evidence favoring cesarean myomectomy in carefully selected patients when appropriate expertise and resources are available.

Conclusion: Cesarean myomectomy can be safely performed in selected patients with large intramural leiomyomas using appropriate hemostatic strategies, including basal ligation. Individualized patient selection, surgical expertise, and adequate preparation are essential to optimize maternal outcomes.

Keywords: Leiomyoma, Myomectomy, Cesarean Section, Hemostatic Techniques

INTRODUCTION

Uterine leiomyomas also known as fibroids or myomas are the most common neoplasms of the uterus that account for approximately 29% of all gynecological hospitalization in women aged between 15 and 54 years.^{1,2} Their origin is not totally understood, the pathophysiology is probably also multifactorial. A genetic incident triggers the onset of the disease and different types of myomas may develop by diverse molecular pathways, a hormonal influence is also present, estrogens and progesterone have a key role in the growth and maintenance of lesions.^{3,4}

During pregnancy, uterine leiomyoma often asymptomatic and diagnosed incidentally by routine prenatal echography. It is estimated that up to 11% of pregnant women have uterine fibroids.⁵ Due to the hormonal and vascular alterations characteristic of pregnancy, both clinicians and patients frequently express concern about the potential for rapid fibroid enlargement and its related complications. Furthermore, it is widely assumed that uterine leiomyomas, particularly those that distort the endometrial cavity, may compromise fertility and contribute to adverse reproductive outcomes, including miscarriage, preterm labor, and placental abruption, although it is not clear how leiomyomas cause obstetric complications.⁶

The role of myomectomy as the primary management for uterine leiomyoma during pregnancy remains controversial. Some studies recommend performing myomectomy after cesarean section, whereas others support its simultaneous execution. The literature presents conflicting evidence regarding the impact of myomectomy during cesarean delivery on obstetric outcomes. Several authors discourage this approach due to concerns about uterine atony, increased risk of hysterectomy, and potential adverse effects on future fertility.^{7,8} However, some authors have challenged this traditional view, advocating myomectomy during cesarean section in carefully selected patients, citing potential benefits such as avoiding repeat surgery, minimizing cumulative surgical risks, and reducing overall healthcare costs.^{9,10} Nevertheless, several factors must still be taken into account, including the potential for increased intraoperative time, blood loss, prolonged hospital stay, and the surgeon's expertise in achieving effective hemostasis.¹⁰

In this case report, we describe a rare instance of a grade V uterine leiomyoma identified during pregnancy, managed through simultaneous cesarean myomectomy. The surgical procedure is presented in detail and illustrated to highlight the intraoperative considerations and technical approach. This report aims to provide insight into the feasibility and safety of performing cesarean myomectomy in similar complex cases, particularly in carefully selected patients.

CASE REPORT

A 35-year-old multigravid woman (G3P2) was referred to our tertiary care center following an ultrasound diagnosis of a uterine leiomyoma obstructing the birth canal. Her obstetric history was significant for two previous cesarean deliveries, both indicated for cephalo-pelvic disproportion (CPD). The current pregnancy was complicated by first-trimester hyperemesis gravidarum, requiring medical management. Transvaginal ultrasound at that time revealed two key findings: a short cervix (2.53 cm) and a large intramural myoma (8.4 × 5.9 × 8.85 cm, FIGO Type 5) located in the posterior

uterine wall, demonstrating partial endometrial adherence and marked intralesional vascularity.

At 13 weeks of gestation, the patient was admitted to our high-risk pregnancy unit for specialized monitoring. She remained hemodynamically stable (BP: 111/67 mmHg, HR: 90 bpm) and asymptomatic, with no reports of vaginal bleeding or uterine irritability. Cardiopulmonary examination was unremarkable, and her body mass index (25.8 kg/m²) placed her in the overweight category. Obstetric assessment confirmed appropriate fetal growth, with a fetal heart rate of 158 bpm and a fundal height one fingerbreadth above the umbilicus, consistent with dates. Laboratory evaluation revealed mild iron-deficiency anemia (Hb: 10.6 g/dL). Pelvic sonography provided additional details: the fetus showed a crown-rump length of 63.76 mm, while the myoma appeared as a solid, hypoechoic mass with irregular margins and prominent Doppler vascularity, predominantly involving the left posterior uterine wall (FIGO Type 5). The cervix remained short (2.1 cm), with a Grade I fundal placenta and normal amniotic fluid index.

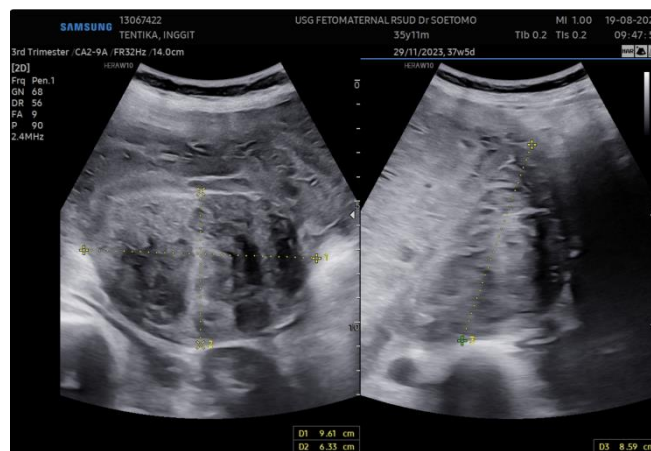


Figure 1. Ultrasound image of myoma. Marked by the yellow dashed line.

The clinical management plan consisted of conservative measures including daily oral micronized progesterone supplementation (200 mg) and scheduled weekly multidisciplinary evaluations. Throughout the antenatal period, the patient maintained compensated anemia (mean hemoglobin 10.5 g/dL) without developing myoma-related complications. Serial fetal surveillance demonstrated appropriate growth parameters and reassuring biophysical testing. Given the patient's history of recurrent cesarean indications due to cephalopelvic disproportion and persistent cervical shortening, we recommended planned cesarean delivery at 38-39 weeks gestation, with consideration for concurrent myomectomy and permanent sterilization contingent upon achieving satisfactory intraoperative hemostasis, particularly given the myoma's high-risk location in the posterior cervical region.

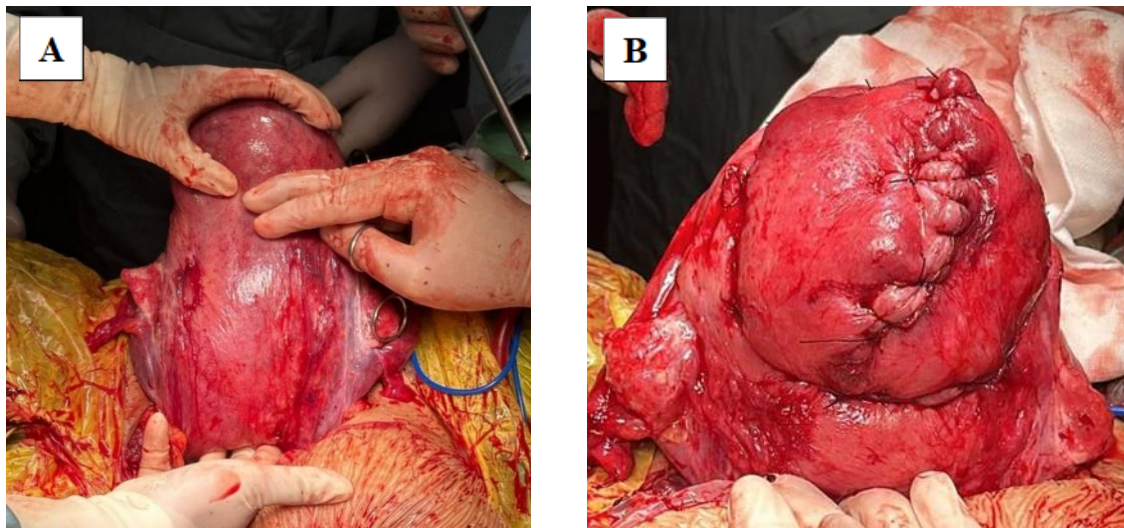


Figure 2. A. Myoma at the posterior uteri during laparotomy. **B.** Repaired uterine after ligation and myomectomy

At 39 weeks' gestation, the patient presented in stable condition for her scheduled procedure. Preoperative evaluation confirmed normal maternal vital signs (blood pressure 119/78 mmHg, heart rate 89 beats per minute) and reassuring fetal status with a reactive non-stress test and normal amniotic fluid index. Ultrasound biometry estimated fetal weight at 3198 grams, while the myoma demonstrated stable dimensions (9.61 × 6.33 × 8.59 cm, FIGO Type V) in the right posterior fundal location. Laboratory analysis showed persistent mild anemia (hemoglobin 10.4 g/dL) without other hematologic abnormalities.

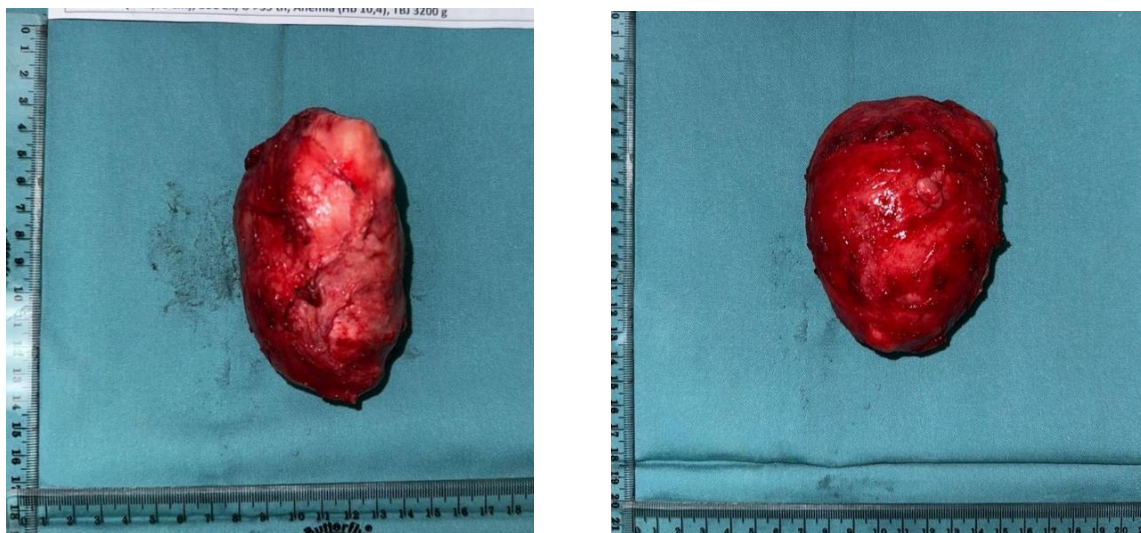


Fig 3.

Gross specimen of myoma after myomectomy

The surgical procedure encompassed three principal components, cesarean delivery with concurrent myomectomy and sterilization. After establishing a bladder flap and retracting the vesicouterine fold caudolaterally, the lower uterine segment was carefully identified. A 2-cm transverse incision was made in the lower uterine segment and extended laterally. Upon rupture of

membranes with clear amniotic fluid, the fetal was delivered, yielding a vigorous male neonate (3118 g, 47 cm, Apgar 7/9). The placenta was delivered with gentle traction, and the uterine cavity was thoroughly inspected and cleaned. The uterine angles were secured with sutures, followed by a two-layer closure of the hysterotomy using continuous locking technique. Attention then turned to the myomectomy, the vascular pedicle at the myoma's base was first ligated with circumferential sutures or base purse-string suture. For the intramural-subserosal 9.5 × 7.5 × 5.3 cm myoma, a precise incision through the pseudocapsule allowed careful enucleation. Hemostasis and uterine repair was achieved through a layered interrupted sutures at the deep resection bed followed by continuous suture. Pomeroy bilateral tubal ligation was then performed. Final evaluation confirmed excellent uterine contraction (no atony) and absence of surgical bleeding. The abdomen was closed in standard anatomical layers.

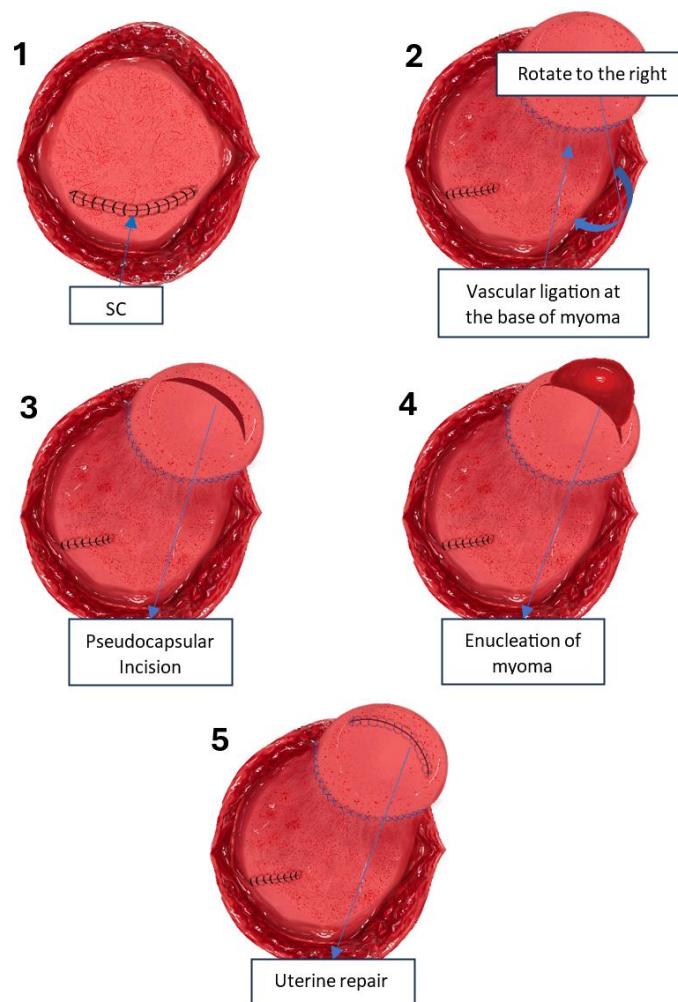


Figure 4. Illustration of operative method. Original artwork by the author (H. R. Rahman)

Histopathological examination definitively confirmed the diagnosis of benign leiomyoma, demonstrating characteristic fascicular architecture composed of uniform spindle cells with ovoid nuclei containing fine chromatin. The specimen showed no evidence of mitotic activity, nuclear atypia, necrosis, or features suggestive of malignant transformation. The postoperative recovery course was uncomplicated, with expected incisional pain adequately controlled through paracetamol. Daily clinical assessments documented stable vital signs, absence of hemorrhage or infectious symptoms, and satisfactory wound healing.

DISCUSSION

Uterine leiomyoma during pregnancy is complex and influenced by hormonal, vascular, and local mechanical factors. Although fibroids are known to be hormone-dependent lesions, their growth throughout gestation follows a nonlinear pattern. Estrogen, progesterone, and human chorionic gonadotropin (hCG) stimulate fibroid proliferation in early pregnancy, while uterine expansion and postpartum ischemic remodeling often lead to regression after delivery (11). In terms of obstetric outcomes, leiomyomas are associated with slightly increased risks of miscarriage, placenta previa, placental abruption, preterm birth, and postpartum hemorrhage, particularly when multiple, large, or cavity-distorting lesions are present. Nevertheless, the evidence remains heterogeneous, and most complications are attributed to the mechanical effects of fibroids rather than direct hormonal influence. Overall, pregnancy can modulate the natural history of fibroids, whereas fibroids may, in turn, adversely affect pregnancy outcomes depending on their size, number, and location.¹² Based on these risks—namely, the presence of a large leiomyoma (>5 cm) and a short cervix, the patient was administered progesterone therapy during pregnancy to prevent preterm birth according to the guideline.¹³

Another potential complication of uterine leiomyoma is cervical shortening, although this association has been rarely investigated and available data remain limited. It has been suggested that this phenomenon may represent one of the underlying mechanisms of preterm labor in pregnancies complicated by uterine leiomyoma.^{14,15} This theory remains controversial due to the limited and inconsistent data available. One study reported an association between the occurrence of a short cervix and the size of the myoma,¹⁴ whereas more recent research did not demonstrate such a relationship.¹⁵ In the present case, cervical shortening was observed during pregnancy along with the presence of a large myoma; however, the patient had also experienced a short cervix in a previous pregnancy, and in this pregnancy, the cervical length gradually improved as gestation progressed. Therefore, in this case, it is possible that the massive myoma did not contribute significantly to the occurrence of cervical shortening.

The management of uterine leiomyomas detected during pregnancy remains a subject of debate, particularly when the lesion is large, intramural, and adjacent to the cervix. Historically, cesarean myomectomy has been discouraged due to concerns about uncontrollable bleeding and increased hysterectomy risk.^{7,8} Conservative management of uterine leiomyoma during pregnancy generally follows two main approaches. The first involves performing myomectomy as a separate procedure after cesarean section delivery, while the second option for cesarean delivery alone

without surgical intervention on the fibroid. The rationale behind these approaches lies in the physiological changes that occur after childbirth. Following delivery and placental separation, a series of hemostatic mechanisms, including uterine contraction and clot formation, produce transient ischemia within the myometrium.¹² This process facilitates the removal of residual placental tissue and uteroplacental vessels and is thought to contribute to the spontaneous regression of fibroids during the puerperal period. Consequently, expectant management may be considered reasonable in selected patients, especially when the leiomyoma is asymptomatic and hemodynamic stability is maintained.¹² One recent case report involving a giant uterine myoma during pregnancy with comparable size to the present case documented a gradual regression to submucosal myoma over two-months and complete regression over a three-year period, this finding indirectly supports the view that myomectomy should be performed two to three months after cesarean section, at which time the myoma has typically undergone regression.¹⁶

Emerging evidence suggests that, in selected patients, simultaneous cesarean-myomectomy approach can be both feasible and safe.^{9,10} Even though, the safety of cesarean-myomectomy is yet to be proven by larger randomized trials.¹⁷ The most common complication associated with myomectomy during cesarean section is hemorrhage, patient with larger myomas (>5cm in diameter), as seen in present case, had increased odds of haemorrhage by 1.2 times as compared to patient with cesarean section alone.¹⁸ This circumstance necessitates the implementation of additional measures during the performance of cesarean myomectomy. Several studies have described various techniques to minimize intraoperative bleeding during cesarean myomectomy, including uterine artery ligation or occlusion, internal iliac artery ligation, intramyometrial injection of carbetocin or vasopressin, the use of a tourniquet around the bilateral uterine arteries, administration of high-dose oxytocin (20–30 IU in 500 mL of saline), and application of electrocautery for hemostasis.^{19,20} In the present case, the operative approach employed a basal ligation technique, in which circumferential or base purse-string sutures were placed around the base of the myoma prior to enucleation. This method has been demonstrated to be a safe and effective strategy for achieving rapid intraoperative hemostasis and preventing excessive blood loss. Several studies have reported favorable outcomes using this approach, with minimal intraoperative hemorrhage, improved postoperative uterine integrity, and reduced need for additional hemostatic interventions.^{21,22}

Overall, this case highlights that individualized decision-making, meticulous surgical planning, and the application of appropriate hemostatic techniques are essential for successful outcomes in cesarean myomectomy. While further evidence is required to establish standardized guidelines, this report contributes additional insight to the growing body of literature supporting the selective use of this procedure.

CONCLUSION

This case provides valuable clinical insights regarding management and approach for large uterine myoma during pregnancy. The observed cervical length improvement and history challenges the assumption that the cervical shortening was due to the effect of fibroid myoma. And Combined

cesarean-myomectomy represents a viable option for select patients with FIGO Type 5 myomas when performed by experienced teams. These findings suggest reconsideration of traditional management paradigms for large cervix-adjacent myomas in pregnancy.

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