

Case Report**Vasopressin to Reduce Blood Loss during Cesarean Myomectomy****Nadhira Salsabila¹, Roziana², Rijal Bulqini³**¹*Medical Programme*²*Urogynecology Reconstruction and Aesthetic Consultant*³*Resident of Obstetrics and Gynecology**Faculty of Medicine Syiah Kuala University, Banda Aceh**Dr. Zainoel Abidin General Hospital***Abstract**

Objective: To report the use of intramyometrial vasopressin to reduce intraoperative blood loss during cesarean myomectomy for a large uterine fibroid.

Methods: We present the case of a term pregnant woman with a large intramural uterine fibroid who underwent myomectomy during cesarean delivery.

Results: A 38-year-old woman, gravida 5 para 4, presented at term with uterine contractions that had persisted for two days. She had been diagnosed with uterine fibroids three months earlier and remained asymptomatic throughout the pregnancy. An emergency cesarean section was performed under spinal anesthesia because of obstetric indications. Intraoperatively, a large intramural uterine fibroid measuring 17 × 11 cm and weighing 1.2 kg was identified and successfully removed. The procedure included bilateral fimbrectomy, uterine repair, and myomectomy. To reduce intraoperative bleeding, 20 IU of vasopressin was injected intramyometrially. The estimated blood loss was 900 mL, and the patient received a transfusion of 250 mL of packed red blood cells. Considering the size of the fibroid, the blood loss was relatively low, and the procedure was completed without major hemorrhagic complications or the need for hysterectomy.

Conclusion: Although uterine fibroids during pregnancy are often asymptomatic, large fibroids may require surgical management during cesarean delivery. This case highlights the potential role of intramyometrial vasopressin as an effective adjunct for reducing intraoperative blood loss during cesarean myomectomy. Careful patient selection, meticulous surgical planning, and close hemodynamic monitoring are essential to ensure patient safety and optimize surgical outcomes.

Keywords: bleeding, cesarean myomectomy, pregnancy, uterine myoma, vasopressin.

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INTRODUCTION

Uterine fibroids, also known as myomas, are benign smooth muscle tumors and represent the most common pelvic tumors among women of reproductive age. The prevalence of uterine fibroids during pregnancy ranges from 3.3% to 10.7%.^{1,2} Although most pregnancies in women with fibroids progress without complications, adverse obstetric outcomes may occur as a result of the fibroids. These include miscarriage, preterm labor, placenta previa, placental abruption, fetal growth restriction, malpresentation, and antepartum hemorrhage,

with complications occurring in approximately 10–30% of pregnancies.³ In addition, the most common complications in pregnant women with fibroids are pain caused by red degeneration or torsion of pedunculated fibroids, as well as symptoms related to pelvic pressure and vaginal bleeding.⁴

The risk of complications in pregnant women with fibroids is influenced by fibroid size, with larger fibroids (>5 cm in diameter) being associated with an increased risk of adverse pregnancy and labour outcomes.⁴ Ultrasonographic evaluation during pregnancy has shown that most fibroids remain stable in size, with less than a 10%

At higher doses, vasopressin activates V1 receptors, resulting in vasoconstriction of vascular smooth muscle and reduced uterine blood flow. However, the optimal dose and concentration of intramyometrial vasopressin that effectively reduce bleeding while minimizing the risk of cardiovascular complications remain controversial.^{12,13}

A 38-year-old lady, who has been pregnant 5 times, came to the hospital with concerns about abdominal pain and contractions that have been occurring for the last 2 days. She refuted any past occurrences of blood or mucus discharge but stated that there was ongoing foetal movement. The patient reported being at 39 weeks and 1 day

Vital signs indicated a blood pressure of 130/90 mmHg, pulse rate of 83 bpm, temperature of 36.4°C, and respiratory rate of 20 times per minute. Abdominal examination revealed appropriate uterine size for gestational age with no visible enlargement due to the fibroid. CTG examination showed the patient was in category I.

Under spinal anesthesia, the patient had an emergency Caesarean section with complications that included bilateral fimbrectomy, uterine repair, and myomectomy. A 17x11 cm, 1.2 kg intramural uterine fibroid was found during surgery, and it was removed with the use of a vasopressin injection to stop the bleeding (Figure 2). The dosage used is 20 IU of vasopressin mixed in 100 cc of NaCl. The uterine incision was sutured.

and the placenta was delivered undamaged. The treatment involved a bladder flap and a bilateral fimbrectomy. A total of 900 cc of surgical bleeding and 600 cc of urine output were produced. During the procedure, the patient received a transfusion of 250 cc packed red blood cells.

The estimated intraoperative blood loss of 900 mL was within an acceptable range compared with reported averages in cesarean myomectomy, where mean estimated blood loss has been reported at approximately 827 mL (range 350–2000 mL), with larger fibroids associated with increased bleeding that may exceed 1000 mL.¹⁴

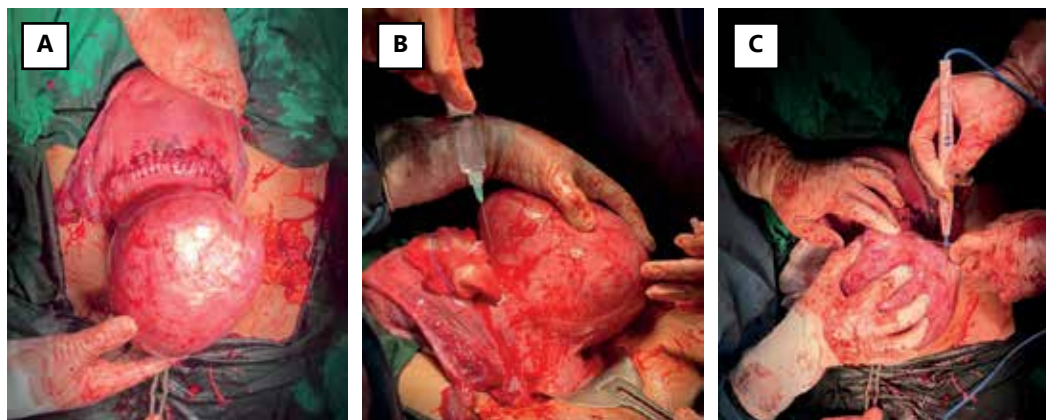


Figure 2. Intraoperative findings revealed: (A) A myoma has been identified in the anterior lower segment of the uterus; (B) Ephinephrine injection at intramyometrial; (C) Enucleation of the fibroid is performed.



Figure 3. Uterus after myomectomy.



Figure 4. Specimen of myoma uteri.

DISCUSSION

The present case demonstrates the surgical challenges associated with managing a giant intramural uterine fibroid during pregnancy. Large uterine fibroids are associated with an increased risk of fetal malpresentation, labor dystocia, cesarean delivery, postpartum hemorrhage, and other adverse obstetric outcomes.^{4,5} In the present patient, the giant fibroid was located in the lower uterine segment and was associated with a transverse fetal lie, necessitating cesarean delivery. The size and location of the fibroid likely distorted the uterine cavity and interfered with normal fetal positioning, consistent with previous reports.⁴

Fibroid size is an important predictor of pregnancy outcome and operative difficulty. Fibroids measuring more than 5 cm, particularly those larger than 10 cm, are associated with increased obstetric complications and greater technical difficulty during surgery.⁵ Although most fibroids remain stable throughout pregnancy, several studies have demonstrated that hormonal stimulation and increased uterine vascularity may promote fibroid growth, especially during early gestation.^{7,8} In the present case, the fibroid enlarged from 12 × 10 cm on antenatal ultrasonography to 17 × 11 cm at surgery. This interval growth likely contributed

to fetal malpresentation and increased the complexity of cesarean myomectomy.

Historically, cesarean myomectomy has been discouraged because pregnancy-associated uterine hypervascularity substantially increases the risk of massive intraoperative hemorrhage, blood transfusion, and, in severe cases, hysterectomy.¹⁰ Nevertheless, recent clinical studies have demonstrated that cesarean myomectomy can be performed safely in carefully selected patients when undertaken by experienced surgeons using meticulous surgical techniques and effective hemostatic measures.^{14,15} In the present case, removal of the fibroid during cesarean delivery was considered appropriate because the giant intramural fibroid occupied the lower uterine segment and would likely have required a second surgical procedure if left untreated.

Recent reviews have further supported cesarean myomectomy as a feasible option in selected patients, provided that appropriate patient selection and adequate surgical expertise are available.^{16,17} Performing myomectomy during cesarean delivery avoids a subsequent operation, thereby reducing additional surgical risks, healthcare costs, and psychological burden. In this patient, who had completed childbearing and subsequently underwent bilateral fimbrectomy, simultaneous myomectomy represented a reasonable and definitive surgical approach.¹⁸ Furthermore, despite the large size of the fibroid, the estimated intraoperative blood loss was only 900 mL, which compares favorably with previously reported outcomes for cesarean myomectomy involving large fibroids.¹⁴

Several techniques have been proposed to reduce intraoperative blood loss during myomectomy, including temporary tourniquet application, uterine artery ligation, tranexamic acid, misoprostol, and intramyometrial vasopressin.¹¹ Among these strategies, intramyometrial vasopressin has consistently been shown to reduce intraoperative blood loss and transfusion requirements.^{11,13} Vasopressin induces localized vasoconstriction through activation of V1 receptors in the uterine vasculature, thereby reducing blood flow at the myomectomy site and facilitating safer enucleation of the fibroid. In the present case, intramyometrial injection of 20 IU vasopressin diluted in 100 mL of normal saline provided satisfactory hemostasis and likely contributed to the relatively low blood loss despite the large fibroid size.

Although intramyometrial vasopressin is effective, its optimal dose and concentration remain controversial because systemic absorption may result in serious cardiovascular complications. Reported adverse events include bradycardia, hypotension, arrhythmias, myocardial ischemia, and cardiac arrest.^{12,19,20} Although the patient received a total dose of 20 IU, no hemodynamic instability or vasopressin-related cardiovascular complications were observed. Adequate dilution, careful intramyometrial injection with prior aspiration, continuous anesthetic monitoring, and close communication between the surgeon and anesthesiologist were likely important factors contributing to the favorable outcome.

Overall, this case supports the selective use of cesarean myomectomy for giant uterine fibroids when performed by experienced surgeons with appropriate hemostatic strategies. Intramyometrial vasopressin appears to be an effective adjunct for reducing intraoperative blood loss; however, meticulous injection technique, individualized dosing, and vigilant intraoperative monitoring remain essential to maximize efficacy while minimizing potential cardiovascular complications.

CONCLUSION

Although uterine fibroids during pregnancy are frequently asymptomatic, large intramural fibroids may increase the risk of obstetric complications and surgical complexity during cesarean delivery. This case demonstrates that cesarean myomectomy can be safely performed in carefully selected patients when meticulous surgical techniques and appropriate hemostatic measures are employed.

Intramyometrial vasopressin appears to be an effective adjunct for reducing intraoperative blood loss during cesarean myomectomy for large uterine fibroids. However, because the optimal dose and concentration remain uncertain and cardiovascular adverse events may occur, careful dilution, individualized dosing, meticulous injection technique, and continuous intraoperative hemodynamic monitoring are essential. Further prospective studies are warranted to establish standardized protocols that optimize both the efficacy and safety of intramyometrial vasopressin in cesarean myomectomy.

ETHICAL APPROVAL AND INFORMED CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical images. Ethical approval was not required for this case report in accordance with institutional policy and national guidelines. All procedures were performed in accordance with the ethical standards of the institutional research committee and with the Declaration of Helsinki.

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