



Anesthetic Management for a Cesarean Delivery in a Pregnancy Complicated by Uterus Polymyomatosis: A Case Report

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Abstract

Benign uterine leiomyomas are the most common pelvic tumors, impairing natural delivery. We report a case of uterus polymyomatosis and recurrent pleural effusions before and during pregnancy. A 35-year-old patient, with Congolese origin, underwent an urgent cesarean delivery because of acute vaginal blood loss, premature uterine contractions and persistent transverse position of the fetus.

The patient was treated with a high lumbar epidural catheter and bilateral intercostal block, permitting a high level of incision. We demonstrate the importance of preoperative multidisciplinary consultation in complex obstetric cases. Ultrasound guidance could be of help to verify the correct level for epidural and intercostal puncture.

Keywords: Cesarean delivery; Epidural catheter; Intercostal block; Ultrasound; Uterus myomatosis

Introduction

Benign uterine leiomyomas (fibroids) are the most common pelvic tumors in women (estimated lifetime risk of 70% in white women and 80% in black women), impairing natural delivery [1-3]. Leiomyomas, also called uterine myomas, can have different locations and alternative penetration: submucosal, subserosal, intramural and pedunculated abdominal or vaginal.

Endometriosis, another gynecological pathology, is usually found in women of child-bearing age [4]. This pathological condition is characterized by the growth of functioning endometrial tissue outside the uterine cavity or myometrium. Endometriosis of the lung and the diaphragm is rare. But these patients may present with symptoms such as shortness of breath, chest pain, and shoulder pain or they may be asymptomatic [4].

We present a case of a young pregnant woman diagnosed with intermittent right-sided recurrent hemorrhagic pleural effusion and a uterus polymyomatosis. The written informed consent to publication was obtained from the patient.

Case Presentation

A 35-year-old patient, 35 weeks and 5 days pregnant (pre-pregnancy BMI 32), was announced. The patient became pregnant after *in-vitro* fertilization. She was known with a uterus myomatosis and grade 4 endometriosis (including pleural, umbilical, ovarian localization) (Figure 1) [5]. Previously, three median laparotomies for myomectomy were followed by either a postoperative pulmonary embolism or a major hemothorax. An appendectomy and curettage were also reported in the past. Therefore suspicion of intra-abdominal adhesions was present. Since three years, the patients suffered from recurrent pleural effusions with dispnea and a dry cough. The lower thoracic pain had a cyclic nature and was probably associated with the menstrual period. She underwent a thoracoscopy for pleural biopsy and analysis. Unfortunately it was not possible to achieve a formal diagnosis. Pleural tuberculosis and malignancy were excluded, though pleural endometriosis is still a possible diagnosis. Several pleural punctures were performed during the past years to relieve symptoms when necessary, showing a hemorrhagic lymphocytic exudate. Two pleural punctures were necessary during this pregnancy. It seems that the pleural effusions were less likely to reoffend during the pregnancy which advocates for catamenial pleuritis. There was no notion of dyspnea during pregnancy.

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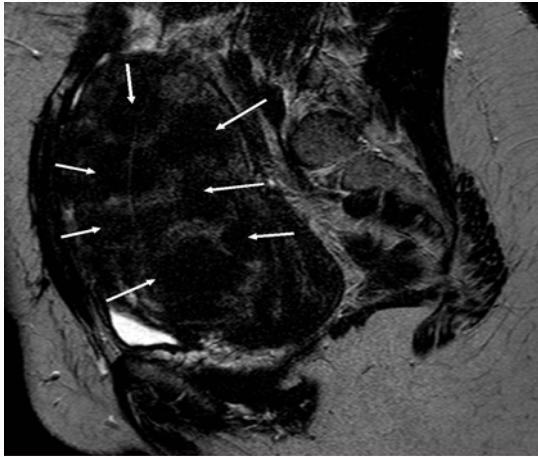


Figure 1: MRI (T2) before pregnancy, uterus myomatous (white arrows).

Several ultrasound investigations during pregnancy showed a uterus polymyomatous with the biggest myoma of 120 mm × 90 mm in previa position. The placenta was located low posterior, inserted on the myomas, but not previa. The cervix was difficult to visualize due to a myoma of 25 mm. Because of the high risk of placenta detachment, cesarean delivery was planned at 36 weeks of gestation.

A preoperative consultation was organized to discuss the anesthetic management and potential complications that might occur during the cesarean delivery. At that moment the patient had a BMI of 34 and a Mallempati grade two. There was no notion of previous airway problems during anesthesia. Preoperative blood tests were favorable, including a hemoglobin level of 10.2 g/dL and normal coagulation tests. The preoperative plan included insertion of an epidural catheter and bilateral intercostal blocks, permitting laparotomy when excessive intraoperative bleeding occurred. An embolization catheter was prepared before starting and the radiology unit was in standby. In the worst scenario, a hysterectomy was planned.

At 35 weeks and 5 days of gestation the patient presented with lower abdominal pain and acute vaginal blood loss. Due to the latter, premature uterine contractions and persistent transverse position of the fetus, an urgent cesarean delivery was decided the same day. Prior to this procedure, the patient was hemodynamic stable and breathing normal without supplementary oxygen. After antibiotic prophylaxis (cefazoline 2 g IV) and oral aspiration prevention (ranitidine 50 mg IV), a preloading bolus of 500 mL colloids (Volulyte®) has been administered before inserting the epidural catheter. Using an ultrasound scan of the spine for a more correct determination of the level, the high lumbar epidural puncture at the level L1 to L2 was performed and catheter was left in the epidural space. After a test dose of xylocaine 2% with adrenalin, ropivacaine 0.75% 11 mL was administered slowly in multiple gifts, each time after examination of the block. An adjuvant bilateral intercostal block, for more hemodynamic stability, was performed under ultrasound guidance, while bilaterally injecting ropivacaine 0.375% 10 mL at level T4 to T5. A sensory block was obtained up to the T4 to T5 level, a motor block up to T6 to T7.

Tranexamic acid was started intraoperatively till 2 days postoperatively (1 g 3 x/d IV). A median supra-umbilical incision was made. Surgery went without major problems, with the exception of many intra-abdominal adhesions. The bleeding was under control

and no extensive invasive procedure was necessary.

A healthy boy was born ten minutes after surgery with excellent Agar-scores (9 at one min., 10 at 5 min.) and arterial umbilical cord pH 7.27. After birth, oxytocin 5 IU was administered as an IV bolus and maintenance fluids contained 15 IU of oxytocin during surgery. Hemoglobin levels stayed stable (min 9.7 g/dL) and no transfusion was necessary, even after 4 and 8 hours postoperatively. Only a cesarean delivery was performed, without resection of the myomas. During surgery there was no need for additional analgesics; the epidural and intercostal blocks were sufficient. The patient received an oxygen mask with 10 L till the baby was born; there were no respiratory problems during surgery.

Antibiotics were continued for three days postoperatively, amoxicillin/clavulanic acid 1 g 4 x/d IV. After surgery the patient went to the recovery room and the next day dismissed to the maternity department. Nadroparin 0.4 mL 2 x/d SC was given from the day after surgery till six weeks postpartum. All coagulation tests remained normal postoperatively. Pain control was obtained with a patient controlled epidural analgesia pump. After 5 days of hospitalization, the patient was discharged without any further problems.

Discussion

This case demonstrates the anesthetic approach of a high-risk surgical patient with uterine myoma during cesarean delivery. A locoregional technique was chosen in terms of maternal safety and being the preferred approach in this surgery in our center.

As reports in the anesthetic literature on anesthetic management of pregnant patients with uterus poly myomatous are very scarce, we want to take the opportunity to discuss some aspects in this respect. An ultrasound guided epidural anesthetic was performed in conjunction with supplementary intercostal blocks, permitting a high incision, above the supposed level of the myoma. The advantage of an adjuvant bilateral intercostal block is to give lower epidural dose, to reach more hemodynamic stability and less hypotension, in a case with possible excessive intraoperative bleeding. The ultrasound was used to properly determine the level of puncture in this obese patient. The risks of intubation of a patient planned for cesarean delivery are much higher due to several anatomic changes including increased breast size, respiratory tract mucosal edema and capillary engorgement of nasal and or pharyngeal mucosa and laryngeal tissues. Mortality is lower with regional anesthesia due to less bleeding, lower risk of surgical site infection and less post-operative pain. The neonatal outcome is actually comparable [6].

The majority of fibroids do not change in size during pregnancy, but one-third may grow in the first trimester. A myomatous uterus often provides a burden for the obstetrician and may induce several hazardous problems for the attending anesthesiologist in terms of increased risk of bleeding. It raises the risk of certain pregnancy complications, such as spontaneous miscarriage, fetal growth restriction, preterm delivery, placental abruption, malpresentation, labor dystocia, cesarean delivery, and postpartum hemorrhage [7].

Conclusion

All precautions were made for potential severe bleeding, including follow up of coagulation, prophylactic administration of tranexamic acid and back-up of an embolization procedure in the radiology unit. Several units of packed red cells were also standby on demand. It is believed that increased fibrinolytic activity, secondary

to release and activation of endothelial tissue plasminogen activator, is involved in the pathogenesis of obstetric hemorrhage. Tranexamic acid, an antifibrinolytic agent, has been shown to be beneficial in trauma patients if used within 3 hours of injury. A recent large randomized controlled trial showed that tranexamic acid given to hemorrhaging women within 3 hours after delivery was associated with decreased risk of death resulting from bleeding with no increase in thromboembolic complications [8]. Limited evidence suggests that prophylactic tranexamic acid reduces blood loss at the time of delivery and decreases transfusion rates in the obstetric population [9].

Furthermore, this case was complicated by a uterus poly myomatosis. One of the myomas was located in predisposition, hampering repositioning of the fetus and natural delivery. Myomectomy is the most common surgical operation performed during cesarean section. With an experienced obstetrician in myomectomy during cesarean delivery and the use of a high dose oxytocin infusion, severe hemorrhage, which is the most serious complication, can be controlled. It is better to remove large myomas in lower segment because they can prohibit post-partum hemorrhage and sepsis. On the other hand, with regard to small fundal myomas, myomectomy may not be indicated [10]. Anyway, cesarean myomectomy is associated with an increased risk of hemorrhage [11].

The location of the myomas determines the risk for bleeding during pregnancy. In early pregnancy, bleeding is significantly more common if the placenta implants close to the myoma compared with pregnancies in which there is no contact between the placenta and myoma [6]. In our case, the placenta was attached on a myoma. This gives an increased risk of detachment and bleeding during pregnancy and delivery. Also, preterm labor is favored. Therefore, a cesarean delivery was planned. Due to premature uterine contractions and acute vaginal blood loss, the risk of placental disruption could not be taken and the patient underwent an urgent cesarean delivery the same day.

Uterine artery embolization, performed immediately after cesarean delivery in women with uterine myomas, may be effective in decreasing postpartum blood loss and minimizing the risk of myomectomy or hysterectomy by reducing the size of the myomas [12].

Intercostal nerve blocks produce stretch of band-like anesthesia along the chosen plane. It can be useful providing surgical anesthesia for thoracic and upper abdominal procedures [13]. We preferred a locoregional technique, even despite the plan to make a high incision. Additional intercostal blocks were made to increase certainty of a pain free anesthesia and lower doses of epidural analgesics to reduce the possible negative hemodynamic effects with epidural analgesia.

As an alternative, it should have been possible to reach sufficient analgesia in this procedure with an epidural or spinal approach, without additional intercostal blocks, though with increased risk of hemodynamic instability.

In conclusion, we demonstrate the importance of preoperative multidisciplinary consultation in complex obstetrical cases, in which ultrasound guidance could be of help to verify the correct level for epidural catheter placement. An adjuvant bilateral intercostal block was necessary, for more hemodynamic stability during surgery with possible excessive intraoperative bleeding.

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