

Prikaz slučaja**MIOMEKTOMIJA U TOKU
CARSKOG REZA KOD P
ACIJENTKINJA SA VELIKIM
MULTIPLIM MIOMIMA: KOLIKI JE
RIZIK?
PRIKAZ SLUČAJA.**

Radmila Sparić^{1,2}, Milan Dokić^{1,2}, Ivana Likić Lađević^{1,2},
Dragiša Šljivančanin¹, Milica Stojičić², Snežana
Vidaković^{1,2}

¹Klinički centar Srbije, Klinika za ginekologiju i akušerstvo, Beograd, Srbija;

²Univerzitet u Beogradu, Medicinski fakultet, Beograd, Srbija

Sažetak

Uvod: Veliki i multipli miomi su dobro poznat uzrok infertiliteta, ali nije neuobičajeno da i pored njihovog prisustva dođe do spontane trudnoće. Tretman pacijentkinja sa velikim i multiplim miomima je kontroverzan, ne samo u toku trudnoće već i prilikom porođaja. Ovakvi miomi mogu da budu uzrok značajnog morbiditeta u puerperijumu. Carski rez je najčešći način završavanja porođaja. **Prikaz slučaja:** Carski rez sa polimiomektomijom učinjen je u 36. nedelji gestacije, kod pacijentkinje sa velikim multiplim miomima, uz upotrebu cell savera, sa dobrim fetalnim i maternalnim ishodom. Pristup donjem segmentu uterusa je bio moguć uprkos postojanju velikih mioma. Živo novorođenče, telesne mase 2600 grama, rođeno je bez teškoća. Nakon zbrinjavanja histerotomije, učinjena je ekstrakcije najvećeg mioma (210 × 180 × 155 mm) i njegovo ležište je ušiveno u dva sloja. U toku miomektomije, korišćen je cell-saver i spasena je značajna količina krvi. Pošto je ustanovljena adekvatna hemostaza, odlučeno je da se ukloni i preostalih osam mioma, što je i učinjeno, bez otvaranja materične duplje. **Zaključak:** Mali je broj radova koji prikazuju intraoperativno „spasavanje krvi” kao tehniku kojom se rešava intraoperativno krvarenje u toku miomektomije, tokom carskog reza. Naš slučaj dokazuje da intraoperativno „spasavanje krvi” u kombinaciji sa velikim hirurškim iskustvom u klasičnoj miomektomiji značajno poboljšava ishod ovakvih operacija.

Ključne reči: miom; trudnoća; komplikacija; porođaj; cell-saver

Autor za korespondenciju: Radmila Sparić, Klinika za ginekologiju i akušerstvo, Klinički centar Srbije, Višegradska 26, 11000 Beograd, Srbija, E-mail: radmila@rcub.bg.ac.rs

Case report**IS CESAREAN MYOMECTIONY IN
PATIENTS WITH LARGE MULTIPLE
MYOMAS ALWAYS A HAZARDOUS
PROCEDURE? A CASE REPORT
(Running title: Cesarean myomectomy in
the treatment of large multiple myomas)**

Radmila Sparić^{1,2}, Milan Dokić^{1,2}, Ivana Likić Lađević^{1,2},
Dragiša Šljivančanin¹, Milica Stojičić², Snežana
Vidaković^{1,2}

¹Clinical Center of Serbia, Clinic for Gynecology and Obstetrics, Belgrade, Serbia;

²University of Belgrade, School of Medicine, Belgrade, Serbia

Summary

Introduction: Although large multiple myomas are a well-known cause of infertility, it is not uncommon to encounter pregnancy with such myomas. Management of women with large multiple myomas is controversial, both during pregnancy and delivery. Such myomas can also cause significant morbidity during the puerperium. Caesarean section is the most common way of delivery. **Case report:** A patient with large multiple myomas underwent a cesarean myomectomy with intraoperative cell salvage at 36 weeks of gestation. Both fetal and maternal outcomes were favorable. The lower uterine segment was accessible, despite the presence of myomas, and a live fetus weighing 2600 g was delivered without difficulties. Following a hysterotomy suturing, the largest myoma (210 × 180 × 155 mm) was removed and the myoma bed was sutured in two layers. Cell-saver was introduced during myomectomy saving significant amount of blood. Careful inspection confirmed appropriate hemostasis, so it was decided to remove the remaining eight myomas, and this was done without breaching the uterine cavity. **Conclusion:** There are few literature reports on intraoperative cell salvage as a technique of handling intraoperative hemorrhage during a CM. As documented by our case, the use of intraoperative cell salvage represents a significant advantage in such cases when combined with extensive surgical experience in conventional myomectomy.

Keywords: myoma; pregnancy; delivery complications; cell-saver

Corresponding author: Radmila Sparić, Clinic for Gynecology and Obstetrics, Clinical Center of Serbia, Višegradska 26, 11000 Belgrade, Serbia, E-mail: radmila@rcub.bg.ac.rs

Introduction

Although large multiple myomas are a well-known cause of infertility¹, it is not uncommon to encounter pregnancy with such myomas^{2,3}. The management of pregnant with large multiple myomas is controversial. Myomectomy during pregnancy is considered to be a hazardous procedure associated with possible subsequent fetal loss and significant maternal morbidity³. Moreover, large myomas (50 mm) may cause both maternal and fetal complications during pregnancy and delivery⁴. Significant perioperative hemorrhage might occur in these patients if a cesarean section (CS) is performed, especially with associated cesarean myomectomy (CM)^{5,6}. However, such myomas are a frequent indication for CS, and it is reasonable to believe that CS rates will rise in such women due to the worldwide trend of delayed childbearing⁷.

Looking at the early history of CM, immediate cesarean hysterectomy was considered to be the treatment of choice in such patients⁸. Even some recent publications report cesarean hysterectomy in women with multiple myomas, who were not interested in further reproduction⁹. Conversely, over the past decades, numerous publications report favorable outcomes of CM, even in cases of multiple myomas, if the procedure is performed by experienced surgeons^{5,10,11}.

We present a patient who had large multiple myomas and underwent a CM, without any complications and with a favorable fetal and maternal outcome.

Case report

A 34-year-old primipara was referred to our institution in her 23rd week of pregnancy with abdominal pain, suggesting red degeneration of previously diagnosed multiple myomas. Largest myoma was estimated to be 140 mm at the first trimester scan. The patient underwent complete clinical, sonographic, laboratory and microbiological work-up. Uterine size was not correspondent with gestational age, and the paraumbilical mass was palpable through the abdominal wall, correspondent with myoma location in the fundal region and to the right. Ultrasonography confirmed the presence of multiple myomas, ranging from 30 to 170 mm in diameter. Placental insertion was just below the largest myoma. The fetus was in transverse lie;

fetal biometry was appropriate for gestational age, and no fetal abnormalities were diagnosed. Laboratory findings revealed anemia with a red blood cell count (RBC) 3.25, hemoglobin level 101 g/l and hematocrit level of 27.5%. C-reactive protein (CRP) was elevated 101.8 ml/l (normal range < 5 mg/L), and the fibrinogen level was 6.4 g/l (normal range 2–4 g/l). The microbiological results documented *Klebsiella Enterobacter* in cervical culture. She was treated with bed rest, analgesics and antibiotics according to her microbiological results, which resolved her complaints. Low molecular weight heparin was introduced for prophylactic reasons. Anemia was treated with iron tablets and folic acid.

Available treatment options were discussed with the patient. She decided to preserve the pregnancy and refused the myomectomy during pregnancy. Due to advanced gestational age and the presence of multiple myomas, myomectomy in pregnancy was not considered to be an appropriate therapeutic approach. Since intermittent irregular uterine contractions were registered, progesterone was administered. In the 28th week of pregnancy, artificial fetal lung maturation was conducted. As serial ultrasound examinations documented normal fetal growth, development and oxygenation, without significant worsening of the maternal status, she further received regular antenatal care in our hospital with fetal surveillance. Ultrasound follow up documented myoma growth, and the size of the largest myoma at 33 weeks of gestation was found to be approximately 200 mm. At 36 weeks of gestation, considering deformation of uterine cavity, breech presentation and maternal cachexia, it was decided to perform CS.

Prior to CS, the patient was informed about the possibility of feasible and safe myomectomy, but also possibility of a massive hemorrhage and an inevitable cesarean hysterectomy.

The patient was operated under general anesthesia. The abdomen was opened by infraumbilical median laparotomy, and several subserous myomas were identified, of which the biggest was subserosal in the fundal region and on the right (Figure 1). Despite myoma presence, the lower uterine segment (LUS) was accessible, and a live fetus weighing 2600 g was delivered without difficulties. Following LUS suturing, the largest myoma was removed and the myoma bed was sutured in

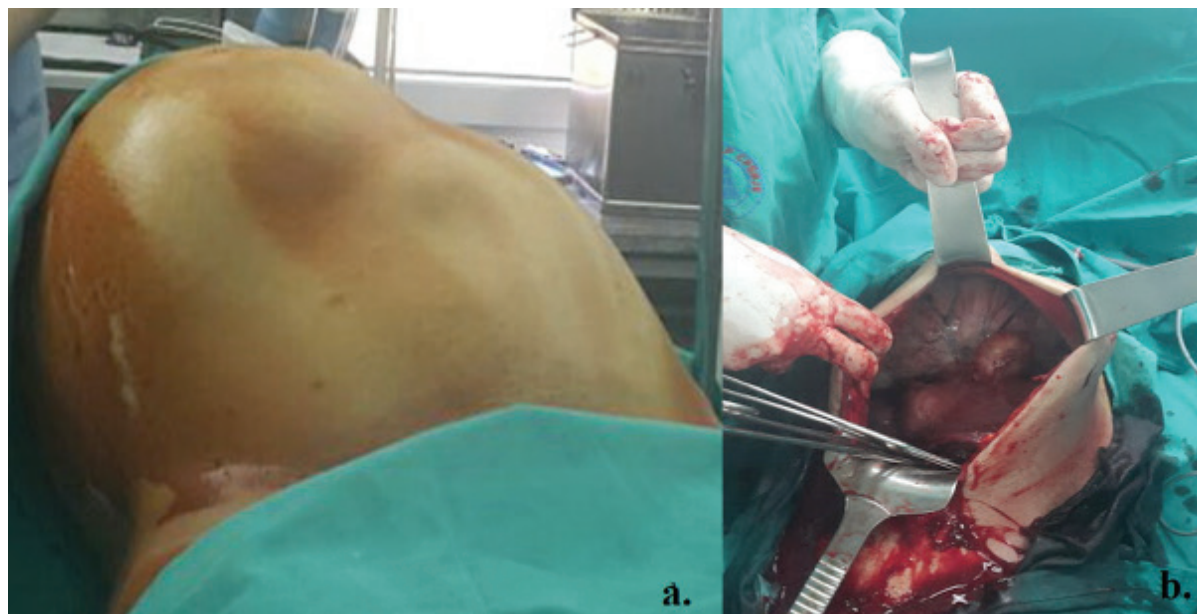


Figure 1: a. preoperative image – abdomen of the patient; b. uterus and the myomas – finding after laparotomy

two layers. Inspection confirmed appropriate hemostasis, so it was decided to remove the remaining eight myomas. Myomectomy was performed without breaching the uterine cavity (Figure 2). An abdominal drain was put in place for prophylactic reasons. The surgery lasted 170 minutes in total, and it was performed by a senior surgeon (S.V.) with vast experience in conventional myomectomy. Intraoperative cell salvage was introduced from skin incision and further onward. The patient received a total of 2450 ml of autologous and 820 ml of heterologous blood transfusion during the operation, 395 ml of fresh frozen plasma, 10 units of cryoprecipitate together with colloid and crystalloid solutions, and 0.5 g of tranexamic acid. After the surgery, she spent one day in the obstetric intensive care unit and received one unit of packed red blood cells (RBC). The patient's recovery was uneventful, and she was discharged with her baby on the seventh postoperative day.

The histopathology report documented a myoma size, ranging from 20 mm up to 210 × 180 × 155 mm and weighing 3300g in total. The microscopic examination of the enucleated myomas found the presence of hyaline degeneration, hemorrhage, necrosis, and calcification (Figure 3).

Discussion

Here we present a favorable fetal and maternal outcome of CS combined with multiple myomec-

tomies in a patient with large myomas, performed by an experienced surgeon with intraoperative cell salvage.

Classic obstetric textbooks generally consider CM to be a risky procedure, particularly in the case of multiple myomas^{5,6}. Moreover, it is documented that myoma size, even in the event of a single myomectomy and particularly in the case of multiple myomas, significantly influences the frequency of intraoperative hemorrhage, which is reported to be as high as 35.29%⁶.

Large multiple myomas are particularly difficult to handle as they can sometimes present an obstacle for cesarean delivery, limiting access to the normal myometrium and, thus, necessitating a CM in order to conduct the delivery itself, even by means of corporeal cesarean section^{5,10,12}. Furthermore, they could be challenging for hysterotomy suture, regardless of its location at LUS or uterine corpus^{5,10}. Hence, early CM reports suggested cesarean hysterectomy, concluding „it will usually be wise to remove the uterus, especially if it is the seat of multiple tumors”⁸.

In cases when delivery and uterine suturing is possible without a myomectomy, as in the presented case, most surgeons would consider interval myomectomy as the treatment of choice^{12,13}. Nevertheless, numerous literature reports describe successful CMs in these patients^{11,14}. Our case supports these observations. Apart from high-dose oxytocin usage, literature reports of various surgical techniques used to reduce perioperative hemorrhage^{5,10}. There is a lack of data on intraoperative



Figure 2: a. uterus after CM, posterior wall; b. uterus after CM, anterior wall and fundus; c. removed myomas

cell salvage as an additional technique enabling CM in cases of large multiple myomas¹⁵. Ma et al.² enucleated a 3645 g myoma, using bilateral ligation of the uterine arteries after closing the corporal uterine incision. Given that the patient was a 32-year-old primigravida, such an approach might be questionable considering the patient's age and parity, despite the fact that the estimated blood loss in this particular case was 1400 ml. On the other hand, because of the presence of abundant vascular anastomosis between the uterine and ovarian blood vessels, this technique is questionable when there is uncontrollable hemorrhage in the case of multiple myomas. Moreover, the use of intraoperative cell salvage in our case enabled multiple myomectomy. It could be an alternative to vascular ligations in cases of multiple myomas, as sometimes these can even present an obstacle in applying both tourniquets and stitches for vascular occlusion to reduce intraoperative hemorrhage¹⁰. Despite the

conclusions in the literature of usefulness of this approach in the reduction of postoperative hemorrhage, as well as myoma recurrence, its use is questionable in women of the reproductive age⁵.

In some instances, CM is inevitable¹². Yuddandi et al.¹⁶ described a case of caseous degeneration of a myoma 170 × 140 mm in diameter during a CS performed for suspected placental abruption. The myoma was so extensively degenerated that it emerged from the uterus following a LUS incision, necessitating an inverted T-shape incision for fetal extraction.

Literature also showed that avoiding CM in such instances could cause significant maternal morbidity in the postpartum period, including sepsis, postpartum hemorrhage, and hysterectomy⁷. Yellamareddygarri et al.¹⁷ described a case of uneventful CS in a woman with a 120 mm posterior myoma, necessitating emergency vaginal myomectomy six weeks postpartum by morcella-

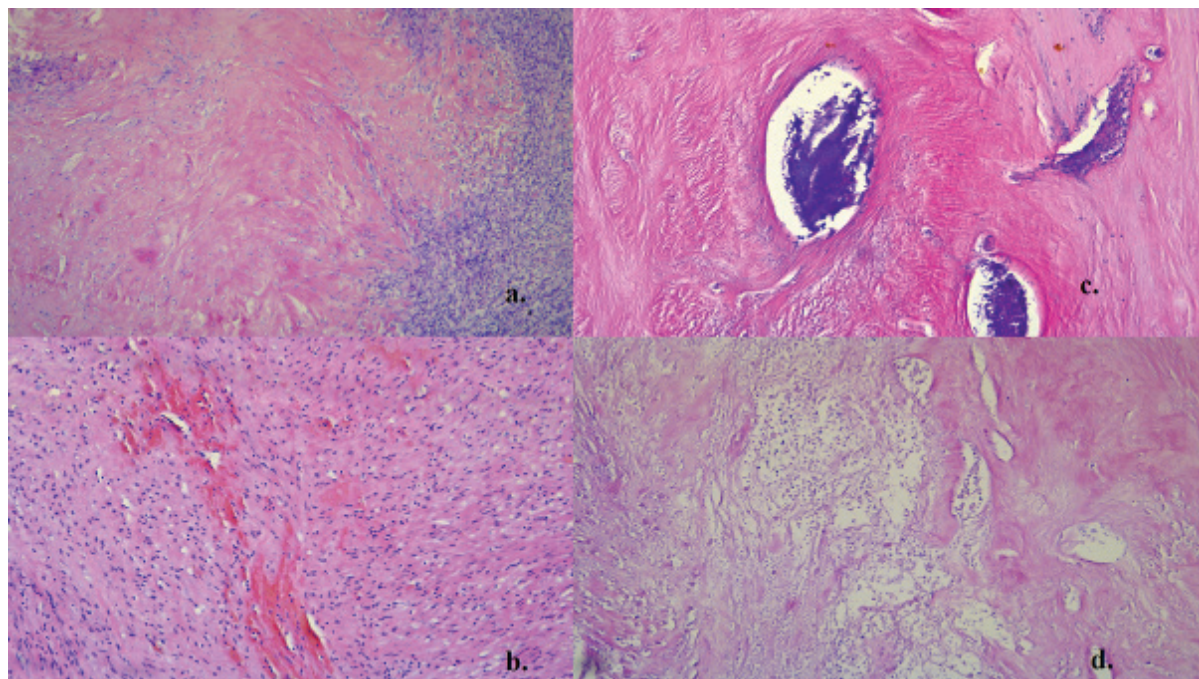


Figure 3: Histological appearance of the largest myoma (hematoxylin eosin staining): a. hyalinization; b. necrosis; c. hemorrhage; d. calcifications

tion and the use of electrosurgery for hemostasis. Histopathology confirmed the necrosis of the removed myoma. Major maternal complications of multiple infarcted myomas after CS were also described by Narayan et al¹⁸. They presented a case of a 36-year-old woman who underwent right hemicolectomy, small bowel resection, end ileostomy, and total abdominal hysterectomy 19 days postpartum. The myomas were found to be pus-filled and densely adherent to intraabdominal organs; their separation from the bowel was not possible. The possibility of developing such complications was prevented by CM in our case.

Recent medical innovations, such as intraoperative cell salvage, provide skillful obstetric surgeons with an option to perform CM in women with a myomatous uterus, thus preserving fertility, avoiding the risks of massive transfusion, and ensuring the mother's uneventful recovery. Moreover, avoiding the use of various hemostatic techniques described in literature prevents possible complications that could arise from compromised uterine vascularization, which is inevitable in cases of suturing and/or the embolization of major blood vessels.

Literature reports on intraoperative cell salvage as a method of handling intraoperative hemorrhage during CS in women with myomas are scarce¹⁵. The reason for this can be that most CM reports originate from low-income countries. Despite the reports on favorable outcomes of CMs in women with a large myomatous uterus, most of

these are case reports, underlining surgical experience as the only factor influencing a good outcome. Nevertheless, reports on unfavorable outcomes are lacking, most probably due to insufficient reporting. Although literature on CM safety and feasibility is abundant^{4,19}, there are few reports on major CM complications^{20,21}. True incidence of life-threatening complications in such cases remains unknown.

The use of intraoperative blood cell salvage for CMs, in combination with surgical expertise in conventional myomectomy it provides good perinatal outcome in challenging cases like pregnancy accompanied with multiple large myomas.

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