

# Laparoscopic Resection of a Torsed Big Myoma at 16<sup>th</sup> Weeks of Gestation

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## ABSTRACT

Myomas are the most common benign tumors of the uterus; however, only 1% to 4% of women were diagnosed with myoma during pregnancy. Although a majority of myomas do not cause any problems during pregnancy and rarely present with torsion or necrosis, myomas might lead to an acute abdomen, which then indicate need for an urgent myomectomy. There are various causes for an acute abdomen during pregnancy, and it is not always easy to make the definitive diagnosis with non-invasive diagnostic tools such as ultrasonography. Because the uterus displaces the intra-abdominal organs during pregnancy, diagnosis of a surgical emergency may be delayed and, consequently, increase maternal morbidity and mortality. If a surgical emergency is indicated, laparoscopy is a safe alternative to laparotomy during pregnancy, requiring a shorter hospital stay and less analgesic; therefore, all surgeons and gynecologists should be able to perform a laparoscopy when needed in each trimester of pregnancy. Herein, we report a 31-year-old primigravid woman presented with an acute abdomen at 16 weeks gestation. Ultrasound examination revealed a nearly 10 cm myoma at the right side of the uterine fundus. Suspecting a torsed myoma, an urgent diagnostic laparoscopy, which revealed a large, torsed, subserous myoma with a 2cm base, was performed. Laparoscopic resection and morcellation was done successfully. No intra-operative or post-operative complications were encountered, and the woman gave birth to a healthy infant at term. By presenting this case, we suggest the safe use of laparoscopic myomectomy of a relatively big myoma even in the second trimester of pregnancy.

**Keywords:** Laparoscopic myomectomy, Pregnancy

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## Introduction

Acute abdomen is defined as any clinical condition that presents with signs and symptoms of abdominal pain and tenderness. It is a medical emergency and often requires surgical intervention.<sup>1</sup> Due to the enlarged uterus and displacement of other intra-abdominal organs, diagnosis of acute abdomen during pregnancy may be difficult for obstetricians to make. Many gynecologic and non-gynecologic diseases may cause acute abdominal pain in pregnancy.<sup>2</sup> However, the rapid diagnosis and early management of acute abdomen is crucial during pregnancy. For example, the perforation rate of appendicitis increases up to 66% during pregnancy when surgery is delayed for more than 24 hours.<sup>3</sup> Therefore, laparoscopy is increasingly used for the diagnosis and management of acute abdomen in each trimester of pregnancy.

The most common non-gynecologic causes of acute abdomen are appendicitis, cholecystitis, and intestinal obstruction. In contrast, torsion of subserous myoma is relatively rare. Although myomas are the most common uterine tumors, occurring in 20% to 40% of reproductive-aged women, its incidence is reported to be as low as 1.6% to 4% in pregnancies.<sup>4</sup> Furthermore, with the trend to delay pregnancies into advanced age, more cases will be diagnosed with pregnancy, and with myoma degeneration or acute torsion leading to abdominal pain, surgery will be required when analgesics are ineffective.<sup>5</sup> As an illustration of our thesis, we report the following case of a woman presenting with abdominal pain and diagnosed with torsion of a large subserous myoma at 16 weeks of pregnancy that required laparoscopic resection of the myoma.

## Case Description

This 31-year-old patient had experienced 16 weeks of uncomplicated pregnancy. She was primigravid and had no history of surgery or systemic disease, and no history of ovarian cyst, pelvic mass, or myoma was present. She felt sudden abdominal pain localized in the right side of the abdomen that progressed over a period of 36 hours. At admission to our emergency room, she had a right-sided abdominal pain that did not resolve in 30 hours. She had no fever, and laboratory findings were within normal limits. Ultrasound examination confirmed the presence of an intrauterine pregnancy and an

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abdominal mass (98×76×85 mm) in the right side of the abdomen. No intra-abdominal fluid was detected by ultrasonography. During the physical examination, a tender abdominal mass was palpated on the right side of abdomen and features of peritonitis were present. She was referred to urgent laparoscopy with a prediagnosis of torsion of myoma.

In the operating room, bimanual examination was done under general anesthesia, confirming a 4-month gravid uterus and a 9 to 10 cm mobile, solid mass was palpated on the right side of the uterine fundus. By manually pushing this mass to posterolateral, an empty space below the umbilicus of nearly 3 cm in length was observed and initial abdominal access was performed transumbilically with an open Hasson technique. Once pneumoperitoneum was achieved (15 mm Hg), a 10 mm zero-degree high definition telescope was placed into the trocar for observation of the abdominal cavity. By laparoscopic inspection, a nearly 10 cm subserous myoma localized in the right side of the fundus was detected. The uterus was globally enlarged due to the 4 months of gestation. Two other lateral trocars were inserted under laparoscopic vision of 3 cm above and 1 cm medial to the anterior superior iliac spine; a 10 mm trocar was placed into the right side and 5mm trocar into the left side. The abdominal pressure was adjusted to 10 mm Hg throughout the operation after insertion of the trocars. Bilateral adnexae were regular, and no ovarian cyst or tumor was present, and the appendix and gallbladder were also within normal limits. A large subserous myoma with a torted base of 2cm was identified in the right side of the fundus; a laparoscopic view of the stalk and myoma is shown in Figure 1.



Figure 1: Laparoscopic view of the myoma and stalk

The base of the myoma was coagulated and dissected with bipolar cutting forceps (Figure 2). No bleeding or defect was detected on the myometrium. An electromechanical tissue morcellator was introduced in the 10 mm right trocar and the entire myoma was removed from the abdominal cavity by morcellation. In order to decrease the thermal effect of morcellation and possible harm to the fetus, the smog was continuously aspirated during this process via the other 5mm right

trocar. No blood loss or intra-operative complication occurred. The skin incisions were closed with 2-0 prolene sutures. The operation took about 54 minutes. Post-operatively, the fetal heart rate was regular and the placenta was of normal appearance. The patient had no early post-operative complications, and she was discharged 48 hours after the operation. Histopathologic examination confirmed the diagnosis of myoma uteri, weighing 210g. She was followed until giving birth to a 3100 g healthy infant at the 38<sup>th</sup> gestational week by normal, spontaneous delivery.



Figure 2: Stalk of the myoma dissected by cutting forceps

## Discussion

Nonobstetric emergencies requiring surgical intervention are encountered in an incidence of roughly 0.75% .<sup>6</sup> The most common emergency is acute appendicitis, and although the incidence does not change in pregnant women, diagnosis and treatment may be delayed in some cases. We know that in a pregnant woman the early diagnosis of intra-abdominal pathologies suggests early treatment for a better prognosis both for the mother and the fetus.

According to the guidelines cited in American Endoscopic Surgeons for Diagnosis, Treatment and Use of Laparoscopy of Surgical Problems During Pregnancy, ultrasound should be the first diagnostic tool of choice for identifying the cause of the abdominal pain during pregnancy.<sup>7</sup> Fibroid degeneration or torsion of the myoma may also be detected by ultrasound. Although it is not always easy to visualize the stalk of myoma, Doppler assessments of vessels in the stalk can confirm the diagnosis of torsion.

Other advanced diagnostic techniques like computerized tomography (CT), magnetic resonance imaging (MRI), and CT enemas should be carefully used due to the risk of cumulative radiation dosage, which may trigger chromosomal mutations and brain damage. In order to diagnose earlier and perform the treatment effectively, the more liberal use of diagnostic laparoscopy may be a logical option.

Since Nezhat et al.<sup>8</sup> first published the laparoscopic ovarian cystectomy in 1991, laparoscopy has been more widely performed during pregnancy. The advantages of laparoscopy are the decreased analgesic requirement, earlier ambulation, and shorter hospital stays for pregnant women. Rapid postoperative recovery after laparoscopic surgery also leads to a reduction in the risk of pulmonary thromboembolism, which is an important cause of maternal mortality.<sup>9</sup>

There are also some disadvantages or concerns about laparoscopic surgery during pregnancy. One of the problems is the cardiovascular and respirator effects of pneumoperitoneum which is exacerbated with patient positioning during the procedure. The question is whether the fetus is harmed by CO<sub>2</sub> diffusion when the maternal arterial CO<sub>2</sub> pressure increases after the diffusion of CO<sub>2</sub> from the peritoneal cavity during laparoscopic insufflation. Pneumoperitoneum is essential for the optimal observation of the abdomen and success of the surgery. An enlarged uterus, pneumoperitoneum, combined with the Trendelenburg position can lead to a deterioration in lung capacity and an increase in partial pressure of arterial CO<sub>2</sub>. In order to avoid the potential harm to the fetus, arterial CO<sub>2</sub> of the mother should be maintained optimally. Bhavani-Shankar et al.<sup>10</sup> showed that the anesthesiologist can easily optimize the maternal arterial CO<sub>2</sub> by changing the minute ventilation in order to keep end-tidal CO<sub>2</sub> at 32 mm Hg. Ideally, by increasing the respiration rate, end-tidal CO<sub>2</sub> should be kept between 32 and 34 mm Hg, and the blood pressure should not be under 20% of the baseline.<sup>11</sup>

Another problem of the laparoscopy is the timing and optimum method for abdominal entry. Due to the potential teratogenicity of the fetus in the first trimester and increased risk of damage to the uterus due to increased enlargement in the third trimester, second trimester is accepted as the most appropriate time for elective laparoscopic surgery. However, in emergencies, especially in the second and third trimesters, preference of laparoscopy depends on the skill of the surgeon. Although open-entry technique is used by a significant number of surgeons in the second trimester of pregnancy, Rollins et al.<sup>12</sup> prefer the closed-entry method after insufflation with the Veress needle. In the case presented, open Hasson technique was also used for entry and lateral trocars, which were inserted after insufflation until 15 mm Hg abdominal pressure was obtained in order to not harm the uterus. The direction of lateral trocars was determined under laparoscopic vision. No technical difficulty or damage to any organ occurred.

Although the myomas are usually asymptomatic, and elective myomectomy is not recommended either during the pregnancy period or caesarian section, in some specific conditions of abdominal pain due to red degeneration being unresponsive to analgesics, torsion of the subserous myoma and rapid increase in the size of the myoma, a myomectomy might be mandatory.<sup>7,13</sup>

In recent years, laparoscopy is increasingly used for both gynecologic and non-gynecologic surgeries during pregnancy. Although rarely reported, laparoscopic resection of myomas can be successfully performed by experienced surgeons in laparoscopy when size and position of myomas are suitable for resection. Abdominal entry methods can be safely selected as either open, blinded, or using the optical trocar technique, depending on the presence of obesity, history of previous abdominal surgeries, the gestational age of the patient, and the experience of the surgeon. However, there is an on-going debate on the preference of using open entry or Veress needle in pregnancy.<sup>14</sup>

Until now, few cases of laparoscopic myomectomy during the second trimester of pregnancy have been reported in the literature.<sup>15-18</sup> The open Hasson technique was the abdominal entry method, and the site of entry was determined according to location of the myoma and the gestational age of the patient in all reported cases. To our knowledge, this case reports one of the largest myomas ever resected by laparoscopic myomectomy during the second trimester of pregnancy. After general anesthesia, we examined the fundus in order to determine contours and height, and later we palpated the mobile mass in the right side of the abdomen. In order to keep an empty space below the umbilicus and avoid injury during entry, we moved the mobile mass more laterally, and initial entry to the abdomen was done by the open technique. Consistent with other literature,<sup>15-17</sup> abdominal pressure was set at 10 mm Hg during laparoscopy in order to avoid the potential risk of fetal acidosis. The intra-abdominal insufflation set point was 10 mm Hg in most of the cases presented in the literature.

As it is the preferred method in the literature, the myomectomy procedure was performed by using bipolar electro-surgical devices in order to avoid harming the fetus with electricity. We resected a big subserous myoma, weighing 200 g, and used morcellation for removing the myoma. The morcellation was performed via a 10 mm trocar located in the right side of the abdomen (Figure 3).



Figure 3: Morcellation of the myoma

Another method of removing a myoma this large can be by making Pfannenstiel incision as defined in the literature.<sup>18</sup> In our opinion, however, making a Pfannenstiel incision would decrease the advantages of laparoscopic surgery, which are less post-operative pain and early mobilization during pregnancy.

In conclusion, laparoscopy should be considered as a safe alternative to laparotomy for any intra-abdominal disease requiring surgery during pregnancy, both for early diagnosis and for treatment, by surgeons experienced in laparoscopy. Although many reports have confirmed the feasibility of laparoscopic myomectomies, more experience and data is necessary in order to optimize the surgical procedure, especially in the second and third trimester.

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