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Case Report

Antenatal myomectomy for acute abdomen caused by red degeneration of a large pedunculated leiomyoma: a case report

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ABSTRACT

Uterine fibroids are one of the the most common benign tumors in women of reproductive age. During antepartum, intrapartum, and postpartum periods, hormonal changes can lead to fibroid enlargement and a range of pregnancy related complications. The most common complication of fibroids in pregnancy is acute abdominal pain, usually caused by red degeneration or torsion of a pedunculated subserosal fibroid. Abdominal pain during pregnancy caused by red degeneration of leiomyoma creates a diagnostic and therapeutic dilemma because of its peculiar and acute presentation. We present the case of a 35 years old, African primigravida, presenting with acute onset right-sided abdominal pain at 19 weeks of gestation. Magnetic resonance imaging revealed a live fetus along with a large degenerating subserosal myoma, abutting the uterine fundus and extending up to liver. In view of persistent abdominal pain not responding to conservative management, emergency exploratory laparotomy was performed. A large 21×15.5×12 cm fibroid was removed, weighing 1.850 kg. The postoperative course was uneventful. Histopathology confirmed infarct type degeneration with extensive hemorrhage and necrosis. At 38 weeks of gestation, she had an uncomplicated vaginal delivery of a healthy baby. Myomectomy is preferably avoided in gravid uterus, however, it may be individualized and performed for selected symptomatic cases following appropriate counselling.

Keywords: Pregnancy, Uterine fibroids, Red degeneration, Myomectomy

INTRODUCTION

Fibroids are benign smooth muscle tumors, which exhibit a broad spectrum of clinical symptoms and cause various obstetrical complications that may eventually influence prognosis. Vast majority of the myomas are asymptomatic during pregnancy, however complications occur in 20–40% of women.¹

Uterine fibroids are most common among African American women and the incidence increases with age.²

The prevalence of uterine fibroids during pregnancy is approximately 0.3–2.6%.³ Pain is the most common complication of large fibroids (>5 cm) in pregnancy during the second and third trimesters of pregnancy.⁴ It is usually caused by torsion of a pedunculated fibroid, red degeneration or a rapid increase in size of myomas. Symptoms typically resolve with conservative management, bed rest, hydration, and analgesics. Antenatal myomectomy is rarely indicated, unless acute severe abdominal pain is unresponsive to conservative management.

CASE REPORT

A 35-years old primigravida presented at our emergency room at 19 weeks of gestational age. She gave history of pain in right iliac fossa for five days, which had intensified over the past two days. She was diagnosed with uterine fibroids prior to conception. She had no significant medical history apart from mild anemia. The patient was hemodynamically stable with mild pallor and normal vital signs. On abdominal examination, 24 weeks soft pregnant uterus was palpable with no contractile activity and normal fetal heart rate. A big palpable firm mass with smooth surface was palpated occupying whole right hypochondrium and lumbar area with tenderness. Blood tests were unremarkable except for hemoglobin of 10

gram%. A bedside obstetric ultrasound revealed a singleton live pregnancy of 19 weeks with multiple uterine fibroids, with largest subserosal fibroid measuring 16 x16 cm. Review of prior ultrasound performed before conception revealed a progressive increase in fibroid size. Given the persistent pain, an abdominopelvic magnetic resonance imaging (MRI) was performed on the day of admission. MRI confirmed a 16.4×16×14.2 cm large well defined exophytic uterine fibroid arising from right lateral wall of uterus showing areas of irregular T1 hyperintense and T2 intermediate signal intensity areas, suggestive of hemorrhage and favouring red degeneration. It was seen compressing right kidney, hepatic flexure and closely abutting right lobe of liver (Figure 1, A and B).



Figure 1: MRI Images. (A) Axial T2-weighted image displaying an infarcted leiomyoma (labeled fibroid) with heterogeneous necrotic tissue (B) Coronal T2-weighted image revealing a large subserosal myoma closely abutting right lobe of liver (labeled fibroid) and a 20 weeks fetus (labeled fetus).

Four more fibroids ranging from 4.2 cm to 1.4 cm were noted. Moderate hydronephrosis was noted in bilateral kidneys. With a provisional diagnosis of red degeneration of fibroid, conservative management was decided upon. Patient was started on intravenous fluids, analgesic and antibiotic therapy, with feto-maternal monitoring. Her symptoms subsided and she was discharged two days later with follow up advice. After four days at 20 weeks' gestation, the patient was readmitted in view of worsening abdominal pain.

Due to the persistence of the symptoms, surgical intervention was deemed necessary. After a detailed multidisciplinary discussion and informed consent regarding intra and postoperative risks related to uterine surgery during pregnancy, emergency laparotomy and myomectomy was agreed upon. Under general anesthesia a midline longitudinal incision was given from xiphisternum to umbilicus, considering the position and size of the fibroid. A large pedunculated fibroid was noted arising from the right lateral uterine wall (Figure 2).

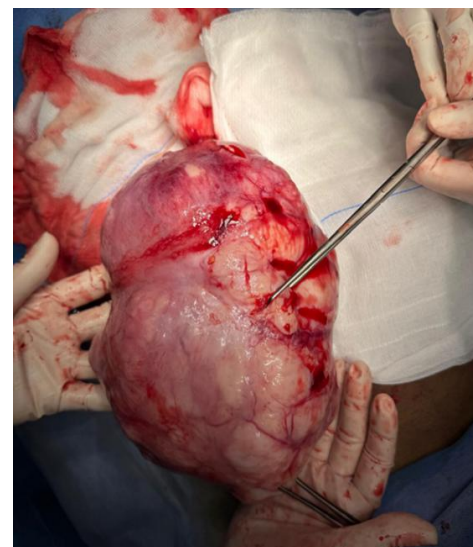


Figure 2: Intraoperative photograph showing large pedunculated subserosal fibroid arising from the right lateral uterine wall.

Pedicle of myoma was ligated with vicryl suture and myomectomy was performed. The myoma measured 21 x 15.5 x 12 cm with weight of 1.850 kg (Figure 3).



Figure 3: Postoperative photograph of the fibroid measuring 21 x 15.5 x 12 cm and weighing 1.850 kg.

Two other intramural fibroids were identified which did not need emergency intervention. No adnexal pathology was seen. Abdomen was closed in layers after hemostasis was secured. The duration of surgery was 35 minutes and no blood transfusion was needed. Cut surface of fibroid on histopathological examination showed gray whorled areas along with large red degenerative areas consisting of spindle cells with extensive ischemic necrosis. Postoperatively patient was transferred to the recovery unit in stable condition. There were no signs of bleeding and the uterus was soft with well-maintained fetal heart rate. She was discharged in hemodynamically stable condition on the third postoperative day, with instructions for postoperative care and regular follow-up. The patient resumed high-risk antenatal follow up and care. The pregnancy continued until 38 weeks when she was admitted for uterine contractions, and had an uncomplicated vaginal delivery of a live healthy girl infant.

DISCUSSION

Pregnancy related hormonal changes have a deep influence on uterine fibroids, including an increase in fibroid volume in 20–30% of cases.⁵ Of the 22% to 32% of fibroids that do increase in volume, the growth is limited almost exclusively to the first trimester.⁴ Benaglia et al in their study on 25 women with fibroids noted that the fibroids grew significantly to more than double their initial sizes during the first seven weeks of pregnancy.⁵

Fibroids undergo different types of degenerations including fatty, hyaline, myxomatous, calcareous and red degeneration.¹ Acute severe localized abdominal pain can

occur if a fibroid undergoes red degeneration, torsion, impaction, capsular disruption or rupture.⁴ In a study by Lee HJ et al in 113 pregnant women, 9% of fibroids showed echogenic changes indicating the development of red degeneration on ultrasound.⁴ Of these women 70% had severe abdominal pain compared with 11.7% of women with fibroids that showed no echogenic changes on ultrasound.⁴

Three main reasons have been identified to explain the acute severe pain associated with red degeneration. Firstly, degeneration can result from excessive growth of fibroid, which causes diminished blood perfusion to the fibroid leading to tissue hypoxia, necrosis, and infarction. Secondly, the growing uterus causes architectural and mechanical compression or kinking of feeder vessels. Thirdly, the pain results from the release of prostaglandins secondary to cellular damage within the fibroid leading to relative ischemia, necrosis and intra-lesional hemorrhage.¹ This happens more commonly in patients with fibroid size more than 5 cm, and in the late first or early second trimester.⁶

Obstetric complications as miscarriage, rupture of membranes, preterm delivery, and uterine rupture can occur in pregnancies complicated by large fibroids.⁶ Schwartz et al in their study reported that degenerative changes within a fibroid can cause necrosis and rupture of the capsule, causing intraperitoneal bleed.⁷

The diagnosis of fibroids and associated changes in pregnancy is challenging. This is due to the presence of the fetus, placenta and changes in uterine anatomy. Gestational fibroids, may have an unusual appearance especially if altered by degenerative changes leading to difficulty in diagnosis. Therefore, if a pregnant woman with a fibroid complains of abdominal pain, various differential diagnosis should be contemplated based on clinical features and radiologic tests.

Ultrasound can be used as a first-line imaging tool in stable patients. Detecting fibroids in pregnancy by ultrasonography is limited (1.4%–2.7%) due to the difficulty in differentiating physiologic thickening of the myometrium from fibroids.⁴ MRI refines characterization of degenerated leiomyoma, any signs of intra-abdominal bleeding and suspected focal rupture. It detects specific changes like peripheral high-intensity on T1-weighted images confined to the thrombosed dilated vessels surrounding the fibroid.⁶ Acute abdominal pain in a pregnant patient with fibroids can be due to appendicitis, gastroenteritis, pelvic inflammatory disease, adnexal torsion or cyst rupture, uterine rupture, placental abruption, bowel obstruction or ileus.^{3,8}

In cases of acute pain abdomen as a result of red degeneration, gold standard is conservative treatment with careful observation, supportive care, bed rest, fluid replacement and analgesics. Acetaminophen is the first line drug for analgesia in patients with red degeneration of

fibroid.⁶ Hardly ever, severe pain may necessitate additional opiate pain medication. Before 32 weeks of gestation, nonsteroid anti-inflammatory drugs (NSAIDs) can be considered for pain management.

Antepartum myomectomy can be safely performed in the first and second trimester of pregnancy by laparotomy or laparoscopy, taking into account, the volume and location of fibroids.⁹ Data confirm that the most used surgical route to approach myomas during pregnancy is laparotomy.⁹ In conditions as intractable pain from a degenerating subserosal fibroid, torsion of fibroid, mechanical compression causing obstruction to the adjacent structures or any large fibroid (>5 cm) located in the lower uterine segment emergency surgery is indicated.⁴ In cases when active hemorrhage is suspected, in unstable patients or persistent pain despite medical treatment to rule out other differentials, laparotomy can be considered.

Antenatal Myomectomy is infrequent because of the risks of severe intraoperative hemorrhage.⁹ A review of literature by Basso A et al. showed that out of 197 women who underwent antenatal myomectomy, 13 cases had miscarriage, one woman needed intraoperative blood transfusion and two patients had hemoperitoneum.⁹ In a systematic review of 54 relevant articles, including 97 patients by Spyropoulou K et al the median number of fibroids removed was one per patient (range 1–5), the principal surgical approach was laparotomy (78.4 %) and the median time taken for surgery was 53 min (range 20–150 min).¹⁰ A retrospective cohort study by Detroit medical center that included 95 women with sonographically identified large fibroids, total fibroid volume (>5 cm) was found to be significantly associated with obstetric complications as short cervix, premature rupture of membrane and preterm delivery.²

Large-scale analytical studies have likewise found that fibroid size was a key determinant of obstetric complications and such pregnancies should be recognized as high-risk and managed accordingly.¹¹ Women harboring large fibroids (>10 cm) had substantially higher risks of adverse outcomes notably preterm birth, malpresentation, cesarean delivery, and postpartum hemorrhage compared to those with smaller fibroids.¹¹

A seven hospital study by Krewson et al. validated that large fibroids (>10 cm) had 2.4-fold higher odds of severe postpartum hemorrhage requiring transfusion.¹¹ Intraoperative and postoperative tocolysis and the use of progesterone to reduce the risk of miscarriage have been suggested, though there remains no consensus on ideal management.¹² Obstetric and neonatal outcomes in women undergoing antenatal myomectomy are comparable to that in women managed conservatively.⁴ As a result of the higher risk of intrapartum uterine rupture, women who had antenatal myomectomy are more likely to have a caesarean section.⁵ In a retrospective study of 120 women delivering at term following abdominal

myomectomy there were no cases of uterine rupture when uterine cavity was not entered.⁶

CONCLUSION

In gestational women with fibroids >10 cm size complaining of acute and persistent abdominal pain, various diagnostic possibilities should be explored before defining the line of management. Such pregnancies should be discussed with multidisciplinary team and handled as high-risk, preferable in tertiary care centers experienced in managing major obstetric hemorrhage. Antenatal myomectomies must be performed for selected symptomatic cases after detailed counseling regarding the risk of haemorrhage, necessity of blood products and an associated risk of fetal loss and hysterectomy. The management of uterine fibroids in pregnancy is a complex endeavour, that necessitates close medical supervision, vigilant oversight, enhanced antenatal surveillance and calculated multidisciplinary teamwork.

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