

Research Letter

Uterus-sparing myomectomy for uterine pyomyoma following cesarean section

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Uterine myoma complicates approximately 1% of pregnancies [1,2]. Pregnancy complicated by uterine myoma presents various problems throughout the perinatal period, including repeated spontaneous abortions, premature delivery, and disorders at delivery. In recent years, the rate of pregnancies complicated by uterine myoma is thought to have increased, because of the increase in late marriages, or because of an increase in diagnoses as a result of advances in imaging technology, including ultrasound.

Some studies have reported patients with uterine myoma complicated by infection. However, among these patients, cases of pyomyoma in which the myoma was filled with ichorous pus, were rare. Since 1945, only 13 patients with pyomyoma that occurred during pregnancy and the puerperium were reported [3]. Among these patients, four underwent Cesarean section (C-section) [3–5]. Moreover, for most of these cases, the only option was total abdominal hysterectomy. Here, we report a patient with an infected uterine myoma that developed after a C-section that was indicated for a pregnancy complicated by uterine myoma. After the pyomyoma was discovered during open surgery, myomectomy was performed to conserve the uterus.

The patient was a 36-year-old nulligravida, with no significant past or family history. At week 6 of her pregnancy, a transvaginal ultrasound revealed a 13 cm uterine myoma involving the muscle layer and the fetal sac in the uterine cavity. The rest of the pregnancy was uneventful, and the myoma did not increase in size. At week 37 day 6, the patient underwent abdominal C-section at the pelvic level. A baby girl was delivered through a low transverse incision of the uterus. The infant's weight was 2512 g, the 1-minute Apgar score was 9, and the 5-minute Apgar score was 10. The volume of intraoperative blood loss was 690 mL, which included

amniotic liquid. A 10 cm myoma was found 3 cm above the uterine incision on the anterior wall of the uterus. The patient had an uneventful postoperative course and was discharged on postoperative day 6. On postoperative day 10, she suddenly developed a fever of 38–39° C and lower abdominal pain. Edema was observed in both lower extremities, and lower extremity venous ultrasound was performed, which was negative for venous thrombosis. Severe pain was elicited by pressure applied in the area of the myoma. The patient had an elevated white blood cell count of 12,900/ μ L and a C-reactive protein (CRP) of 20.6 mg/dL. An infection of the uterine myoma was suspected, and oral administration of methyl-ergometrine maleate (0.75 mg/day) and levofloxacin (500 mg/day) was begun on postoperative day 10. The CRP decreased to normal on postoperative day 20. However, on postoperative day 60, she again developed a fever of 38–39° C and lower abdominal pain, and was referred to our department.

An elevated white blood cell count of 9300/ μ L and a CRP of 16.7 mg/dL suggested infection. No residue was found in the uterine cavity, but a significant amount of grayish-white vaginal fluid was observed, which grew *Enterococcus faecalis* (*E. faecalis*) on culture. On postoperative day 62, a tissue fragment measuring 6 cm was discharged from the uterus. Evaluation of the specimen suggested necrotic leiomyoma plus infection. Magnetic resonance imaging (MRI) revealed a 10 cm mass on the anterior wall of the uterine corpus. T1-weighted imaging showed a low signal intensity, with an area of inhomogeneous high signal intensity inside the mass (Fig. 1A). T2-weighted imaging findings were the same (Fig. 1B). On postoperative day 73, an open myomectomy was performed. No abnormalities were seen in the abdominal cavity. The anterior wall of the uterus was vertically incised, and a large amount of fetid pus was found in the myoma. Removal of the pus revealed a discolored brown wall of the myoma (Fig. 2). The myoma was enucleated and the surgery was completed. The pus from the myoma was cultured, and *E. faecalis* was identified. Cefozopran hydrochloride (2 g/day)

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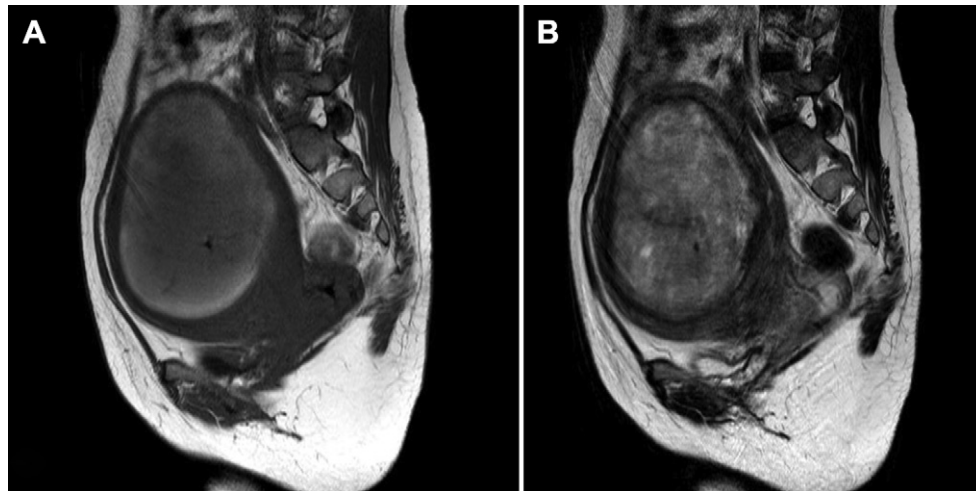


Fig. 1. T1-weighted (A) and T2-weighted (B) images showing a 10 cm tumor on the anterior wall of the corpus of the uterus. An area of inhomogeneous high signal intensity is seen in the mass.

and ampicillin (2 g/day) were administered orally for 10 days, followed by levofloxacin (500 mg/day). The patient had a good postoperative course and was discharged on postoperative day 21. The patient was doing well 1 year after the myomectomy.

Some studies reported that infections of uterine myomas develop in a necrotic lesion in the myoma [4,6]. Necrosis is often caused by bleeding associated with pregnancy and/or delivery, or decreased blood circulation during and after the menopause; therefore, infected uterine myomas are frequent during the perinatal period, including post abortion and the puerperium, and after the menopause [4,6–8]. There are three potential infectious pathways, including directly from the uterine cavity, in relation to infected adnexae or intestinal tracts, and through hematogenous or lymphogenous spread of infection from other areas in the body [7]. Infecting organisms include *Clostridium* species, *Staphylococcus aureus*, *Serratia* species, *Enterococcus* species, and hemolytic streptococci [4,6]. While endometritis may often be effectively treated with antibiotics, infected myomas often require surgical intervention.

The pyomyoma or infected uterine myoma that we have described, is rarely observed during pregnancy and the puerperium. Only 13 cases have been reported to date, most of which required myomectomy [3]. Our patient did not present with findings of infection before C-section. The onset of symptoms during the puerperium suggests that the infection was associated with the C-section. The signs of infection that appeared to resolve following administration of antibiotics recurred. Recurrence might have been caused by exposure of the myoma to the uterine cavity, or formation of a fistula between the myoma and endometrium as a result of the initial infection. Myomectomy was performed, and subsequent administration of antibiotics led to resolution of the infection and improved the clinical course.

This case suggests that infected uterine myoma that does not resolve after treatment with medication only, may require rapid surgical intervention. In addition, conservation of the uterus is possible with appropriate use of postoperative antibiotics.

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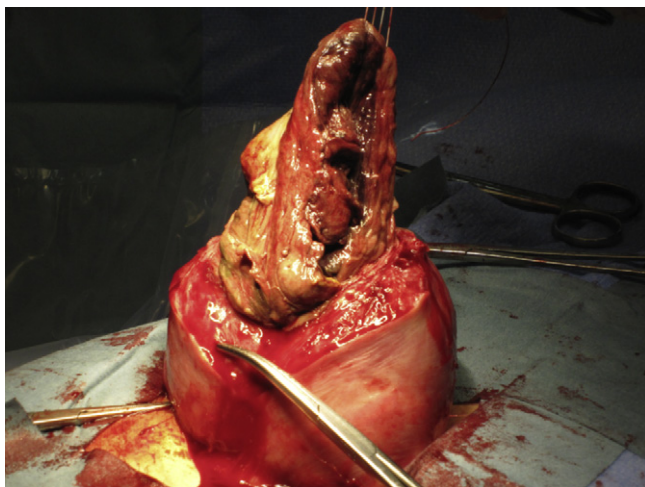


Fig. 2. Intraoperative findings of the pyomyoma. The interior cavity of the myoma after the pus was removed is shown.