

# An Unusual Cause of Postabortal Fever Requiring Prompt Surgical Intervention: A Pyomyoma and its Imaging Features

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## ABSTRACT

Pyomyoma is an unusual complication of leiomyoma, occurring most commonly in the postpartum, postabortal, and post-menopausal periods. It develops due to infection in necrotic foci within leiomyoma, which is more common during pregnancy due to rapid growth, and in postmenopausal women due to vascular insufficiency. Other contributing factors are curettage, gynecological surgery, cervical stenosis, immunodeficiency, and recently, uterine artery embolization. It presents with a typical triad of sepsis, leiomyoma, and absence of any apparent source of infection. We report a case of persistent postabortal fever in a 26-year-old female due to a pyomyoma, which resolved after a myomectomy. Pyomyoma may become life threatening in the event of intraperitoneal rupture resulting in pyoperitoneum and septic shock. Hence, gynecologists should consider this diagnosis in women with a leiomyoma and sepsis in the absence of any apparent source of infection.

Leiomyoma of the uterus is a common smooth muscle tumor in 20–30% of premenopausal women.<sup>1</sup> However, an infected leiomyoma containing pus (termed a pyomyoma) is extremely rare and has high morbidity and mortality.<sup>2</sup> About 100 cases of pyomyoma have been reported worldwide of which only 19 cases were reported after 1945.<sup>3,4</sup>

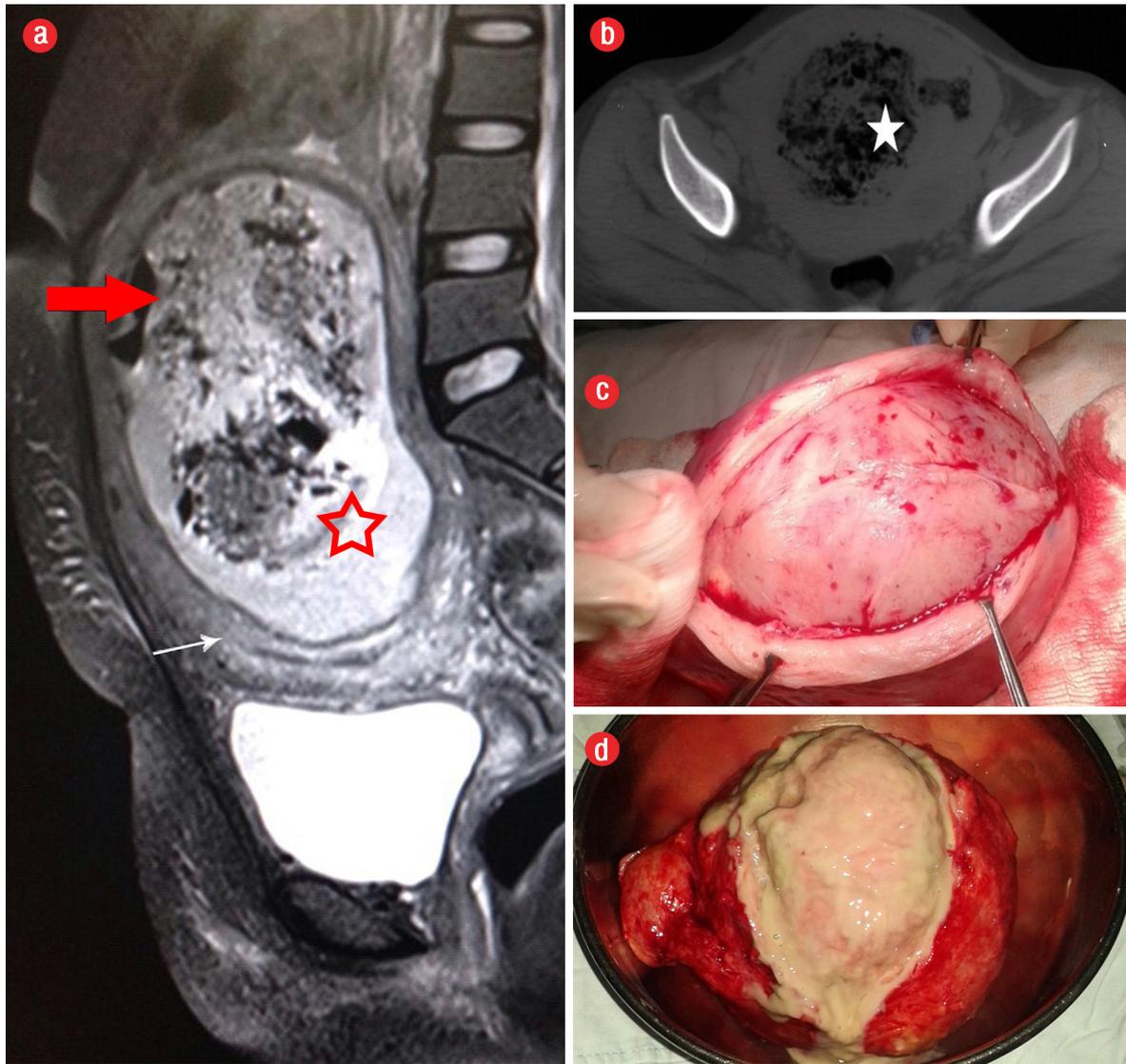
## CASE REPORT

A 26-year-old woman with a uterine leiomyoma was referred to our hospital six weeks after a spontaneous abortion with persistent fever. She gave a history of dysmenorrhea and menorrhagia. Magnetic resonance imaging (MRI) performed two years prior showed a large posterior wall leiomyoma (11 × 7 cm). Her first pregnancy ended in intrauterine fetal death at 20 weeks gestation followed one day later by spontaneous abortion. She experienced excessive bleeding after the abortion, which was controlled with curettage. Subsequently, she developed fever with chills ranging from 38–39 °C, which persisted to date. There was no history of fever or ruptured membranes prior to abortion.

In her initial septic work up, she had anemia with hemoglobin (Hb) levels of 7 g/dL and polymorphonuclear leukocytosis (total leukocyte

count (TLC) 18 000–24 000/m<sup>3</sup>, polymorphs 85%), but her blood and urine cultures were sterile. Widal test was negative. She received intravenous antibiotics (ceftriaxone, amikacin, and metronidazole). An ultrasound performed one week later showed a submucosal leiomyoma (15 × 15 cm) with echogenic foci along with pyometra; this was drained by cervical dilatation. She was admitted to the hospital and received antibiotics for four weeks (piperacillin with tazobactam, vancomycin, and meropenem). Thereafter, she was admitted to another hospital for two weeks. Her Hb was 6.4 g/dL for which she received three units of blood. Intravenous antibiotics (imipenem and clindamycin) were administered based on vaginal swab culture showing *Escherichia coli*. Sagittal T2-weighted MRI showed a large ovoid heterogeneously hyperintense lesion on the posterior wall of the uterus with air fluid level in nondependent part. The endometrium was compressed anteriorly [Figure 1a]. As her MRI two years prior showed a large leiomyoma, the present features were suggestive of degeneration with abscess formation.

On admission to our hospital, she was febrile (38 °C). Her chest and cardiovascular systems were normal. The uterus was tender, enlarged to 24 weeks size and there was no hepatosplenomegaly. There was no vaginal discharge. Her Hb was



**Figure 1:** (a) T2-weighted sagittal magnetic resonance image showing ovoid heterogeneously hyperintense lesion (star) in the posterior wall of uterus with air-fluid level (red arrow) in the nondependent part. Endometrium was compressed anteriorly (white arrow). (b) Axial noncontrast computed tomography showing mottled air lucencies in uterus suggestive of collection (star). (c) Pyomyoma after incising the myometrium. (d) Cut section of pyomyoma with purulent content.

8.3 g/dL, TLC was 12 500/mm<sup>3</sup>, and renal and liver function tests were normal. Her blood, urine, and cervical swab cultures were sterile. A computed tomography (CT) scan (axial section) showed mottled air lucencies in the uterus suggestive of collection or necrosis with infection in the existing leiomyoma [Figure 1b]. She underwent laparotomy and myomectomy. Both tubes and ovaries were normal. On cutting open the leiomyoma, foul smelling pus was present [Figure 1c and d]. She became afebrile one day after myomectomy. The pus culture from the pyomyoma was sterile. Antibiotics were stopped on the fifth postoperative day, and she

was discharged. Histopathology showed leiomyoma with inflammation.

## DISCUSSION

A pyomyoma develops due to infection in necrotic foci within a leiomyoma.<sup>2</sup> Necrotic foci in a leiomyoma are more common during pregnancy due to rapid growth and hemorrhage, and in postmenopausal women secondary to vascular insufficiency.<sup>2</sup> In the postpartum and postabortal period, ascending infection may result in a pyomyoma.<sup>2,5</sup> Other factors which contribute are

curettage, gynecological surgery, cervical stenosis, or immunodeficiency.<sup>6</sup> The incidence of pyomyoma has increased in recent years due to uterine artery embolisation.<sup>7,8</sup> A leiomyoma may get infected by direct spread from the adjacent endometrial cavity, bowel or adnexa, and by hematogenous or lymphatic spread.<sup>2</sup> Kaler et al<sup>9</sup> reported a case of postpartum pyomyoma in a patient with preterm premature rupture of membranes, chorioamnionitis, and postpartum hemorrhage managed with intrauterine balloon tamponade.

A typical triad of its clinical features is sepsis, leiomyoma, and absence of any other source of infection.<sup>10</sup> The infection is usually polymicrobial.<sup>6</sup> The common organisms include *Staphylococcus aureus*, *Streptococcus haemolyticus*, *Proteus*, *Streptococcus agalactiae*, *E. coli*, *Enterococcus faecalis*, and *Sphingomonas paucimobilis*.<sup>2,6</sup> *E. coli* were cultured in a vaginal swab in this patient. The most common symptom is fever.<sup>6</sup> In a review, fever was observed in 84% and abdominal pain in 57% of patients.<sup>4</sup> Differential diagnoses to be considered include: pyometra, tubo-ovarian abscess, red degeneration of leiomyoma, or septic abortion.<sup>2</sup>

Sonographic features include a heterogeneous mass with echogenic foci suggestive of air.<sup>2</sup> Presence of air on CT scan is a characteristic of pyomyoma or gossypiboma.<sup>2,10</sup> As there was no prior history of laparotomy or intrauterine packing following abortion, gossypiboma was not considered. On MRI, we observed a large ovoid heterogeneously hyperintense lesion in the posterior wall of the uterus with air fluid level in nondependent part, which were interpreted to be a leiomyoma with degeneration or abscess formation. A subsequent CT with mottled air lucencies in the uterus was also suggestive of pus collection in the leiomyoma resulting in a pyomyoma.

A serious complication of a pyomyoma is its spontaneous rupture, which presents as an acute abdomen with septicemic shock.<sup>4</sup> Discontinuity of the wall of a leiomyoma along with the presence of intraperitoneal air plus free fluid is suggestive of rupture of a pyomyoma.<sup>11</sup> In our patient, abortion followed by curettage and a submucosal location contributed to the development of a pyomyoma. The mortality associated with a pyomyoma varies from 21–30%, hence, early diagnosis is important to manage this potentially life-threatening condition.<sup>2</sup> The definitive treatment is hysterectomy or myomectomy if fertility is desired along with

antibiotics.<sup>2</sup> De Maio et al<sup>12</sup> reported a case where pyomyoma was removed vaginally thereby avoiding major abdominal surgery. CT guided drainage of pyomyoma related to pregnancy has also shown success as a minimally invasive option, hence preserving fertility.<sup>13,14</sup>

## CONCLUSION

Our patient presented with postabortal fever secondary to pyomyoma (i.e., infection in the leiomyoma). Sonographic features of pyomyoma include a heterogeneous mass with echogenic foci suggestive of air. The presence of air on CT scan is a characteristic of pyomyoma. Early diagnosis is important to manage this potentially life-threatening condition. Surgical treatment is the management of choice. Gynecologists should consider the diagnosis of pyomyoma in women with a leiomyoma and sepsis in the absence of any apparent source of infection.

### Disclosure

The authors declared no conflicts of interest.

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