



# Hemoperitoneum Caused by Spontaneous Rupture of Uterine Leiomyoma in a Perimenopausal Woman

Ji Hyun Choi, Hyun Ju Liu, Soo Min Heo, Soo Ah Kim

Department of Obstetrics and Gynecology, Chosun University Hospital, Chosun University School of Medicine, Gwangju, Korea

Uterine fibroid, or leiomyoma, is a common benign neoplasm in women, but serious complications are rarely reported. We present the case of a 48-year-old woman with acute onset of abdominal pain. She was hemodynamically unstable, and computed tomography revealed abundant fluid collection in the peritoneal cavity, suggesting hemoperitoneum. During emergency exploratory laparotomy, the subserosal vein overlying a uterine fibroid was identified as the source of bleeding. Hemostasis was accomplished with fibroid excision. Spontaneous hemorrhage originating from a uterine fibroid is extremely rare, but may lead to life-threatening conditions. Therefore, in female patients with acute abdominal pain and hemoperitoneum, uterine fibroid may be a potential etiology and emergency exploratory laparotomy should be considered.

**Key Words:** Hemoperitoneum, Leiomyoma, Perimenopause

## INTRODUCTION

Uterine fibroids, or leiomyomas, are benign tumors derived from the smooth muscle of the myometrium. Although it is a relatively common tumorous condition in women, it is often small in size and remains asymptomatic. Intraperitoneal hemorrhage from an underlying uterine leiomyoma is extremely rare, and only limited reports are available [1]. As such, the condition is often misdiagnosed, which may lead to fatal consequences. We report a case of hemoperitoneum originating from a uterine fibroid. We believe this is only the second report of such a case in the Korean literature.

## CASE REPORT

A 48-year-old woman was referred to our emergency department with a chief complaint of severe abdominal pain. The patient's presentation was acute, accompanied by nausea, chills, and cold sweating. The patient appeared pale, and while her mental status was alert,

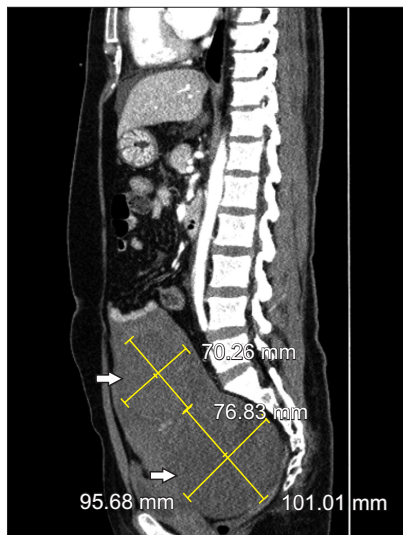
systolic blood pressure was 60 mmHg, and diastolic blood pressure was 40 mmHg. Her heart rate was elevated at 119 beats per minute. On physical examination, the abdomen was distended with diffuse pain, and local tenderness was observed in the lower abdomen. The patient's medical history was unremarkable.

Serum blood analysis revealed a hemoglobin level of 5 g/dL. The patient underwent transfusion of 3 units of packed red blood cells to compensate for the unstable hemodynamic status. Computed tomography (CT) revealed 10.1 cm × 9.5 cm and 7.6 cm × 7.0 cm heterogeneous masses in the uterus (Fig. 1) and abundant fluid collection in the peritoneal cavity (Fig. 2). Ultrasonography showed the same finding, suggesting hemoperitoneum in the abdominal cavity. Unfortunately, because she was transferred from another hospital to our emergency room, we did not have any information about previous ultrasonography or specific clinical signs. The cause of bleeding was unclear, but owing to her unstable hemodynamic status, the decision was made to perform emergency laparotomy in order to

Received: December 16, 2020 Revised: February 27, 2021 Accepted: March 29, 2021

Address for Correspondence: Soo Ah Kim, Department of Obstetrics and Gynecology, Chosun University Hospital, Chosun University School of Medicine, 365 Pilmun-daero, Dong-gu, Gwangju 61453, Korea

Tel: 82-62-220-3090, E-mail: ksa@chosun.ac.kr, ORCID: <https://orcid.org/0000-0002-9049-1741>



**Fig. 1.** Abdomen and pelvis computed tomography enhance. The arrows indicate uterine masses measuring 10.1 cm  $\times$  9.5 cm and 7.6 cm  $\times$  7.0 cm.

explore and control the source of bleeding.

The patient was transferred to the operating room, and the peritoneal cavity was approached through a vertical incision on the lower abdomen under general anesthesia. On dissection of the subcutaneous fat and the underlying fascia, approximately 1,800 mL of blood and blood clots were evacuated from the pelvic-abdominal cavity. After removal of the hematoma, the uterus was carefully examined to identify the potential source of the hematoma. During the inspection, multiple myomas were noted at the fundus of the uterus, which enlarged the uterus to the size of a watermelon. Using the International Federation of Gynecology and Obstetrics classification, the patient's fibroid could be categorized as type 7, which is a fibroid pedunculated on the subserosal surface. Active bleeding was noted at the fundus of the uterus, which originated from the vessel of a pedunculated myoma. Upon ligation of the bleeding vessel, excision of the pedunculated myoma was performed using an electrocautery device and open sealer (LigaSure; Medtronic, Minneapolis, MN, USA). The resected surface of the uterus was sutured using absorbable polysorb and monosyn sutures. Further exploration found no other bleeding sources.

From the initial visit to the end of the surgery, the patient received 10 packs of platelets, 8 packs of fresh frozen plasma, and 8 packs of packed red cells. Following surgery and transfusion, her hemoglobin level increased from an initial 5 to 10.2 g/dL. Her vital signs



**Fig. 2.** Abdomen and pelvis computed tomography enhance. The arrows indicate peritoneal fluid with an imaging density suggestive of blood.

returned to normal after surgery.

Postoperative CT performed 3 days after surgery showed evacuation of the hematoma with the remaining uterus. The patient was discharged after 7 days in a healthy state. A follow-up visit was made 6 weeks after surgery, but no further complications were noted.

## DISCUSSION

Uterine fibroids, or leiomyomas, are reported to occur in approximately 25% of women and up to 30%–40% in women aged 40 years or older [2]. Despite being a common gynecologic disease entity, acute complications of uterine fibroids are relatively rare. The more common presentation includes torsion of the pedunculated fibroid, urinary retention, thromboembolism, and subtle bleeding from degenerated fibroids. Therefore, the condition is often left untreated, and surgical treatment is mostly limited to symptomatic cases.

Acute hemoperitoneum due to uterine fibroids is extremely uncommon. In most cases, hemoperitoneum is caused by the rupture of a subserosal vessel overlying a uterine fibroid. The reason for this phenomenon is poorly understood, but increased venous pressure or abdominal pressure, as occurs during lifting of heavy objects, defecation, or menstrual periods, has been suggested as a potential reason [3–5].

In most patients, the symptoms are sharp lower abdominal pain that occurs suddenly and includes dizziness, vomiting, and hypovolemic shock. They usually

cause life-threatening conditions [6].

Intra-abdominal hemorrhage with active bleeding is an emergency and requires immediate diagnosis and treatment. In these cases, however, a preoperative diagnosis of hemorrhage of unknown origin is commonly made. A precise preoperative diagnosis is rarely made, and one study reported that the correct diagnosis was made preoperatively in only 7.8% of cases [7].

Since the surgery cannot be delayed due to hemodynamic instability, the precise preoperative diagnosis rate seems to be low as no additional tests have been conducted for accurate diagnosis before surgery.

Differential diagnoses included ruptured ectopic pregnancy, ruptured ovarian cyst, gastrointestinal and vascular disorders, perforated peptic ulcer and ruptured splenic aneurysm [8-10].

Pelvic ultrasonography and CT imaging help in the diagnosis of intra-abdominal hemorrhage, but it is difficult to determine the cause of the bleeding [11]. On magnetic resonance imaging, the appearance can vary depending on the stage of blood products, often with heterogeneous T1 and T2 signals and variable enhancement [12].

Emergency surgery should not be delayed in patients with hemodynamic instability. Surgical management includes total hysterectomy, myomectomy, or ligation of the bleeding vessel [13]. Recent systematic reviews have shown that myomectomy was the preferred intervention over hysterectomy when a ruptured vessel was identified over the uterine fibroid, and patients who underwent hysterectomy were generally older than those who underwent a myomectomy. However, there were no differences in the prevalence of shock, blood loss, or transfusion between the groups [10,14].

In our patient's case, exploratory laparotomy was performed for the diagnosis of hemoperitoneum, and the uterine fibroid was treated by surgical excision. Intra-abdominal hemorrhage of a spontaneous or traumatic nature in women of reproductive age is commonly associated with a ruptured ectopic pregnancy or ruptured corpus luteum [15]. Hemoperitoneum with hypovolemic shock secondary to bleeding from a vessel overlying a leiomyoma is rare, but it may cause severe morbidity and even mortality. Therefore, we should consider the possible source of bleeding from uterine fibroids in any woman with acute abdominal pain and a history of uterine myoma. And data collection and research on vascular CT or ultrasound that can give more accurate information will be needed in the future.

We report a case of spontaneous rupture of a subserosal fibroid resulting in a fatal condition with life-threatening bleeding requiring massive transfusion and emergent surgery.

## ACKNOWLEDGMENTS

This study was supported by research funds from Chosun University Hospital 2017.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

## REFERENCES

1. Rokhgireh S, Kashi AM, Kermansaravi M, Tajbakhsh B, Allahqoli L, Alkatout I, et al. Hemoperitoneum due to bleeding from a vein overlying a subserous uterine myoma: a case report. *J Med Case Rep* 2020; 14: 55.
2. Okolo S. Incidence, aetiology and epidemiology of uterine fibroids. *Best Pract Res Clin Obstet Gynaecol* 2008; 22: 571-88.
3. Estrade-Huchon S, Bouhanna P, Limot O, Fauconnier A, Bader G. Severe life-threatening hemoperitoneum from posttraumatic avulsion of a pedunculated uterine leiomyoma. *J Minim Invasive Gynecol* 2010; 17: 651-2.
4. Ihama Y, Miyazaki T, Fuke C. Hemoperitoneum due to rupture of a subserosal vein overlying a uterine leiomyoma. *Am J Forensic Med Pathol* 2008; 29: 177-80.
5. Sule AZ. Traumatic rupture of uterine fibroid: an uncommon cause of post traumatic haemoperitoneum. *West Afr J Med* 2000; 19: 158-9.
6. Fontarensky M, Cassagnes L, Bouchet P, Azuar AS, Boyer L, Chabrot P. Acute complications of benign uterine leiomyomas: treatment of intraperitoneal haemorrhage by embolisation of the uterine arteries. *Diagn Interv Imaging* 2013; 94: 885-90.
7. Deopuria R. Haemoperitoneum secondary to rupture of coronary veins on a fibroid uterus (review of world literature). *J Obstet Gynecol India* 1970; 20: 409-13.
8. Saidi F, Constable JD, Ulfelder H. Massive intraperitoneal hemorrhage due to uterine fibroids. *Am J Obstet Gynecol* 1961; 82: 367-74.
9. Risai T. A case report on sudden death of a patient due to giant uterus myoma prior to operation. *Mie Med J* 1965; 15: 129-31.
10. Lim WH, Cohen SC, Lamaro VP. Intra-abdominal haemorrhage from uterine fibroids: a systematic review of the literature. *BMC Surg* 2020; 20: 70.
11. Kamat NV, Telkar HB, Ramani SK, Thakker AP. Ruptured degen-

- erated uterine fibroid diagnosed by imaging. *Obstet Gynecol* 2001; 98(5 Pt 2): 961-3.
12. Mizrahi DJ, Kaushik C, Adamo R. Hypovolemic shock and hemoperitoneum from spontaneous avulsion of a large pedunculated uterine leiomyoma. *J Radiol Case Rep* 2017; 11: 15-21.
  13. Althobaiti FA, Alsaadi KK, Althobaiti AA. A case of hemoperitoneum due to spontaneous bleeding from a uterine leiomyoma. *Am J Case Rep* 2019; 20: 167-70.
  14. Stewart EA, Cookson CL, Gandolfo RA, Schulze-Rath R. Epidemiology of uterine fibroids: a systematic review. *BJOG* 2017; 124: 1501-12.
  15. Gupta S, Manyonda IT. Acute complications of fibroids. *Best Pract Res Clin Obstet Gynaecol* 2009; 23: 609-17.