

Spontaneous Rupture of a Vessel over a Subserous Uterine Fibroid

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Uterine fibroids are common in females of reproductive age. Generally, uterine fibroids are a benign condition and acute complications are rare. Reported acute complications include rupture of vessels overlying the fibroid and rupture of uterine fibroids that may lead to life-threatening intraperitoneal hemorrhage. Prompt diagnosis and management are mandatory in emergency gynecological practice.

A forty-eight-year-old female presented with sudden onset of abdominal pain of four hours duration. The patient had four uncomplicated vaginal deliveries. Abdominal ultrasound was suggestive of intraperitoneal hemorrhage. An intact uterine fundal fibroid measuring 8x7.2 cm was found. CT scan revealed an enlarged uterus with multiple large fibroids.

The patient underwent emergency exploratory laparotomy. Intraoperatively, a spurting vessel over the surface of the fundal subserosal uterine fibroid was found. A total abdominal hysterectomy was performed. The postoperative period was uneventful. She was discharged in a stable condition with a hemoglobin of 10 gm.

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Uterine fibroids are the most common benign gynecological tumors. These are hormone dependent; they are the abnormal growth of uterine smooth muscle and connective tissues. The risk factors include age, ethnicity, endogenous and exogenous hormonal factors, obesity and lifestyle^{1,2}. Fibroids may be single or multiple and the sites and sizes vary. They are classified as follows: SM-Submucosal: 0-pedunculated, 1-less than 50% intramural, 2-more than 50% intramural, O-other: 3-contacts endometrium/100% intramural, 4-intramural, 5-subserosal more than 50% intramural, 6-subserosal less than 50% intramural, 7-subserosal pedunculated, 8-others are cervical and parasitic^{1,3}.

Generally, fibroids are asymptomatic and the symptoms vary according to the size and site. Common symptoms include pain, heavy menstrual bleeding, symptoms of anemia and pressure⁴. Acute symptoms arise from the intraperitoneal hemorrhage due to the rupture of an overlying vessel, rupture of fibroids and torsion of the myomas^{5,6,7}. These are rare complications of uterine myomas and constitute a risk to the patient's life.

The aim of this presentation is to report a rare complication of spontaneous rupture of a vessel overlying a subserous fibroid type 5-6.

THE CASE

A forty-eight-year-old female presented with sudden onset of abdominal pain of four hours duration; the pain was severe,

constant, and radiating to the back and shoulder tip, and associated with dizziness. There was no bleeding per vagina. No history of bladder or bowel disturbances. No history of gastrointestinal symptoms or fever. No history of trauma or similar episodes.

Her menstrual history was normal, but occasionally associated with heavy menstrual bleeding since 2017. She had a prolonged duration of bleeding in some cycles. Her last menstrual period was approximately four weeks before the presentation; she was not sure about the date.

The patient was a known case of multiple uterine fibroids, diagnosed in 2017, and was scheduled for a hysterectomy. She was also a known case of hypothyroidism. She had thyroidectomy in 2000 and hysteroscopy in 2018 for intrauterine contraceptive device (IUCD) removal, which was in situ for approximately 15 years. The patient had four uncomplicated vaginal deliveries. Her updated cervical smear was negative.

The patient was hemodynamically stable: BP: 105/55 mmHg, HR: 82 bpm, RR: 14 breaths/min, SpO₂: 100%. The urine pregnancy test was negative and her hemoglobin was 9.3 gm. Gradually, her clinical condition deteriorated. She became hypotensive and hemodynamically unstable. The hemoglobin dropped to 5.9 gm.

Physical examination revealed generalized tenderness over all quadrants of the abdomen and was tense. Abdominal ultrasound

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revealed free fluid in the abdominal cavity suggestive of intraperitoneal hemorrhage. An intact uterine fundal fibroid measuring 8x7.2 cm was found. CT scan revealed moderate to gross intraperitoneal fluid collections over the perihepatic /perisplenic levels and pelvis. The uterus appeared enlarged with multiple large fibroids, the largest being fundus-anterior subserosal 10.3x7.5 cm with an area of heterogeneous density, just superior to the uterine fibroid. Meanwhile, she was stabilized with intravenous colloids and crystalloids. Blood transfusion was initiated.

The patient underwent emergency exploratory laparotomy. Intraoperatively, a spurting vessel overlying the surface of the fundal subserosal uterine fibroid was found. Approximately two liters of blood was drained. She received 4 units of packed RBCs, six frozen plasma and six platelet concentrate. Both ovaries were normal. Total abdominal hysterectomy was performed, see figures 1 and 2.

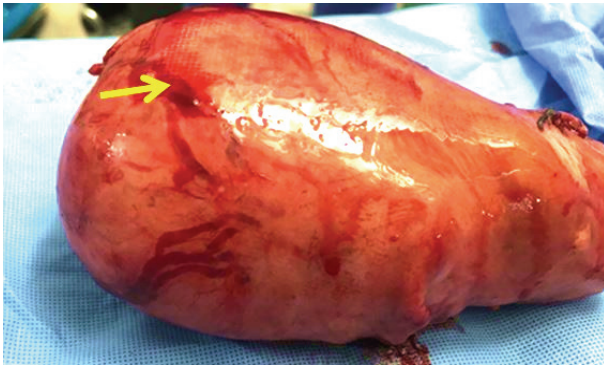


Figure 1: The Uterus with Ruptured Vessel overlying the Uterine Fibroid



Figure 2: The Uterus with Ruptured Vessel Overlying the Uterine Fibroid

Macroscopically, the uterus measured 19x11x8 cm and weighed 810 g. The large fibroid seen at the fundus measured 11.5x10x8cm with a greyish-white vague nodular appearance. Other few smaller fibroids were measuring from 0.7 - 4.5

cm with greyish-white whorled appearance. The average endometrial thickness was 0.1 cm. There was a brownish defect noted in the fundal area.

Microscopically, the endometrium showed proliferative activity. No inflammation, hyperplasia, or malignancy was seen. The myometrium showed multiple leiomyomata of average cellularity with hyaline and cystic changes. No atypia or significant mitosis was seen. The defect showed bleeding from the disrupted large size blood vessel protruding from the tumor.

The postoperative period was uneventful. She was discharged in a stable condition with a hemoglobin of 10 gm.

DISCUSSION

Uterine leiomyomas presenting as a gynecological emergency is a rare event. Uterine fibroids are benign tumors. Reshef et al concluded that angiogenic growth factors play a crucial role in the pathophysiology of fibroids, including abnormal vasculature, growth and survival⁸. Leiomyomas occur in the reproductive age group and the additional risk factors include increased alcohol intake, dietary factors such as increased consumption of red meat, ethnic susceptibility, history of hypertension, familial and genetic predisposition⁹⁻¹⁵. Fibroids or myomas can be classified depending on the location such as submucosal, intramural, subserosal and pedunculated subtypes. Massive intraperitoneal hemorrhage due to the rupture of a blood vessel overlying a myoma, although rare, does occur. In most cases, there is a history of violent coitus, hard work, forceful defecation, and examination under anesthesia¹⁶. Direct pelvic trauma can result in the avulsion of a pedunculated fibroid^{17,18}. Our patient did not have these risk factors.

Several theories are considered responsible for the spontaneous rupture of veins over a uterine fibroid. Menstruation and pregnancy causing increased congestion of the superficial veins of the fibroid has been suggested¹⁹. Our patient had regular menstrual cycles, but experienced menorrhagia on and off. The management of uterine fibroids, whether medical or surgical, depends on the number, size and location²⁰. Hemodynamic stability and parity are to be considered. Leiomyomas more than 10 cm in size and venous congestion are reported as risk factors for the rupture of superficial vessels^{21,22}. The presence of a subserosal fibroid of 15x10cm with rupture of superficial vessels in our case confirms that risk factor.

Cerruto et al found that identifying the difference between ascites and hemoperitoneum could be challenging. Ultrasound and CT are essential for the diagnosis²³. Akahira et al reported two cases who presented with hemoperitoneum, the first was managed with exploratory laparotomy and myomectomy; the second case was managed with exploratory laparotomy and total abdominal hysterectomy²⁴. In our case, the patient was a 48-year-old para 4, managed with resuscitative measures, exploratory laparotomy and total abdominal hysterectomy. Lotterman et al managed their case with supportive measures, laparotomy and myomectomy²⁵.

Histopathology in our case was confirmed as leiomyomata with an area of defect showing bleeding from a disrupted large-sized blood vessel protruding from the tumor. Gulati et al found that benign leiomyoma with hydropic changes in a case of massive

hemorrhage from a large vessel over a 19 cm subserous fibroid²⁶.

Lim et al found that intra-abdominal hemorrhage secondary to uterine fibroids remained a rare phenomenon that is poorly recognized by physicians²⁷. We too failed to recognize this condition pre-operatively. Rokhgireh et al concluded that surgeons should consider the possibility of rupture of a vein overlying a fibroid in cases of acute abdominal pain with a history of leiomyomas⁶. Jenayah et al advised to keep it as a differential diagnosis while dealing with patients with hemoperitoneum and pelvic mass⁵.

CONCLUSION

Patients with fibroid could present with hemoperitoneum. Recognition of this rare complication of uterine fibroid and the instantaneous management is essential to save the patient's life.

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REFERENCES

1. Younas K, Hadoura E, Majoko F, et al. A Review of Evidence-Based Management of Uterine Fibroids. *The Obstetrician & Gynaecologist* 2016;18:33–42.
2. Faerstein E, Szklo M, Rosenshein N. Risk Factors for Uterine Leiomyoma: A Practice-based Case-Control Study. I. African-American Heritage, Reproductive History, Body Size, and Smoking. *American Journal of Epidemiology* 2001; 153(1): 1–10.
3. Cooper K, Saraswat L. Surgical Management of Heavy Menstrual Bleeding: Part 2. *The Obstetrician & Gynaecologist* 2017;19:101–8.
4. Williams ARW. Uterine Fibroids – What's New? Version 1. *F1000Res* 2017; 6: 2109.
5. Jenayah AA, Saoudi S, Sferi N, et al. Spontaneous Subserosal Venous Rupture Overlying a Uterine Leiomyoma in a Young Woman. *Pan Afr Med J* 2017; 28:205.
6. Rokhgireh S, Kashi AM, Kermansaravi M, et al. Hemoperitoneum due to Bleeding from a Vein Overlying a Subserous Uterine Myoma: A Case Report. *J Med Case Rep* 2020;14(1):55.
7. Le D, Dey CB, Byun K. Imaging Findings of a Torsed Pedunculated Uterine Leiomyoma: A Case Report. *Radiol Case Rep* 2019; 15(2):144-149.
8. Tal R, Segars JH. The Role of Angiogenic Factors in Fibroid Pathogenesis: Potential Implications for Future Therapy. *Human Reproduction Update* 2014; 20(2):194-216.
9. Wise LA, Palmer JR, Harlow BL, et al. Reproductive Factors, Hormonal Contraception, and Risk of Uterine Leiomyomata in African-American Women: A Prospective Study. *Am J Epidemiol* 2004;159(2):113–23.
10. Sato F, Nishi M, Kudo R, et al. Body Fat Distribution and Uterine Leiomyomas. *J Epidemiol.* 1998;8(3):176–80.
11. Chiaffarino F, Cipriani S, Ricci E, et al. Alcohol Consumption and Risk of Uterine Myoma: A Systematic Review and Meta-Analysis. *PLoS One* 2017;12(11):e0188355.
12. Wise LA, Palmer JR, Harlow BL, et al. Risk of Uterine Leiomyomata in Relation to Tobacco, Alcohol and Caffeine Consumption in the Black Women's Health Study. *Hum Reprod* 2004;19(8):1746–54.
13. Baird DD, Hill MC, Schectman JM, Hollis BW. Vitamin D and Risk of Uterine Fibroids. *Epidemiology* 2013;24(3):447.
14. Faerstein E, Szklo M, Rosenshein NB. Risk Factors for Uterine Leiomyoma: A Practice-based Case-control Study. II. Atherogenicrisk Factors and Potential Sources of Uterine Irritation. *Am J Epidemiol* 2001;153(1):11–19.
15. Eggert SL, Huyck KL, Somasundaram P, et al. Genome-wide Linkage and association Analyses Implicate FASN in Predisposition to Uterine Leiomyomata. *Am J Hum Genet* 2012; 91(4):621–28.
16. Danikas D, Theodorou SJ, Kotrotsios J, et al. Hemoperitoneum from Spontaneous Bleeding of a Uterine Leiomyoma: A Case Report. *The American Journal of Surgery* 1999; 65, 1180-1182.
17. Drutman J, Fruechte DM. Hemoperitoneum due to Traumatic Avulsion of a Pedunculated Uterine Leiomyoma. *American Journal of Roentgenology* 1992; 158, 1410.
18. Estrade-Huchon S, Bouhanna P, LimotO, et al. Severe Life-threatening Hemoperitoneum from Posttraumatic Avulsion of a Pedunculated Uterine Leiomyoma. *Journal of the Minimally Invasive Gynecology* 2010; 17, 651-652.
19. Mattison DR, Yeh SY. Hemoperitoneum from Rupture of a Uterine Vein Overlying a Leiomyoma. *American Journal of Obstetrics and Gynecology* 1980; 136, 415-416.
20. Vilos GA, Allaire C, Laberge PY, et al. The Management of Uterine Leiomyomas. *J Obstet Gynaecol Can* 2015; 37(2):157–78.
21. Horowitz E, Dekel A, Feldberg D, et al. Massive Hemoperitoneum due to Rupture of an Artery Overlying a Uterine Leiomyoma: A Case Report. *Acta Obstetrica et Gynecologica Scandinavica* 2005; 84(4):408-9.
22. Dahan MH, Ahmadi R. Spontaneous Subserosal Venous Rupture Overlying a Uterine Leiomyoma. A Case Report. *The Journal of Reproductive Medicine* 2002; 47(5):419.
23. Cerruto E, Sudano MC, Ettore C, et al. Difficult Diagnosis of Hemoperitoneum in a Patient with a Pelvic Mass of Large Size. *International Journal of Surgery Case Reports* 2016; 26:197-8.
24. Akahira JI, Ito K, Nakamura R, et al. Massive Intra-abdominal Hemorrhage and Hypovolemic Shock due to Rupture of a Coronary Vessel of a Uterine Leiomyoma: A Report of Two Cases. *The Tohoku Journal of Experimental Medicine* 1998; 185(3):217-22.
25. Lotterman S. Massive Hemoperitoneum Resulting from Spontaneous Rupture of Uterine Leiomyoma. *The American Journal of Emergency Medicine* 2008; 26(8):974-e1.
26. Gulati N, Raman S, Srinivasan M, et al. Rare Gynaecological Emergency: Massive Intra-abdominal Haemorrhage from Spontaneous Rupture of a Superficial Vessel on a Large Leiomyoma. *Case Reports* 2016; 2016:bcr2015212576.
27. Lim WH, Cohen SC, Lamaro VP. Intra-abdominal Haemorrhage from Uterine Fibroids: A Systematic Review of the Literature. *BMC Surgery* 2020; 20:1-7.