

## Research Letter

# Hemoperitoneum secondary to rupture of a superficial uterine artery overlying a subserous myoma with no predisposing factors in a young woman

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Uterine leiomyomas (fibroids, myomas) are common pelvic tumors in women of reproductive age [1], whereas spontaneous intraperitoneal hemorrhage due to uterine leiomyoma is extremely rare [2]. The origin of spontaneous intraperitoneal hemorrhage of uterine myomas is often derived from veins, and may cause anemia and hypovolemic shock afterward [3]. From the perspective of gynecology, hemoperitoneum is usually caused by ectopic pregnancy, ruptured corpus luteum, or adnexal torsion [4–6], and the bleeding is usually venous in origin and can be severe or even life threatening. The diagnosis is often delayed to the time of operation. Recently, we encountered a case of spontaneous hemorrhage of hemoperitoneum resulting from a uterine leiomyoma in a young woman. This hemorrhage was secondary to a spontaneous rupture of a superficial uterine artery overlying a subserous myoma without any predisposing factors.

A 22-year-old woman, gravida 0, with no gynecologic or medical condition, surgery, or prior sexual experience, was sent to the emergency department with a sudden onset of acute abdominal pain that was accompanied by bilateral shoulder pain. The patient's last menstruation occurred 7 days before she presented to the emergency department. No trauma or other associated gastrointestinal or genitourinary system problems were noted.

Urine pregnancy test was negative. Examination revealed an afebrile woman in moderate distress (blood pressure: 90/60 mmHg; pulse rate: 96 beats/min). Hemoglobin measured 10.6 g/dL. Transabdominal ultrasound showed excessive free fluid at the Morrison pouch and the Douglas pouch, as well as

a 10-cm solid mass in the pelvic cavity. Abdominal computed tomography showed a 13-cm irregular mass with cystic and soft-tissue components with heterogeneous contrast enhancement on postcontrast images, with suspicious uterine mass lesions. However, the condition progressed suddenly, characterized by cold extremities, pallor, tachycardia (130 beats/min), and hypotension (70/undetectable mmHg). After blood transfusion and fluid replacement, diagnostic laparoscopy was immediately performed. A bleeding site on the uterine mass was identified. Coagulation was done at first with a pulsed bipolar system, and then blood and blood clots were evacuated. Laparoscopic myomectomy was performed without incident and the final pathology was uterine leiomyoma (mitotically active leiomyoma with focal epithelioid change). Blood loss during surgery, including the hemoperitoneum, was almost 3000 mL. Blood transfusion with 14 units of packed red blood cells and eight units of fresh frozen plasma was administered. The postoperative course was uneventful, and the woman was discharged on the 5<sup>th</sup> postoperative day in good condition.

Intraperitoneal hemorrhage from uterine leiomyoma is extremely rare, despite the fact that uterine myomas are the most common tumor in the uterus, and sometimes interventions are required [7,8]. To the best of our knowledge, the most frequent cause of gynecologic hemoperitoneum is ruptured ectopic pregnancy [9]. With leiomyomas, acute or subacute abdominal pain may arise from torsion, infection, or sarcomatous degeneration, which is accompanied by necrosis and cystic degeneration [10].

Herein, we reported a young woman who had neither a history of trauma nor surgery or medical illness, but she had a spontaneous rupture of the feeding artery to the uterine myomas. There are two theories to explain this situation [11]: one, that a myoma larger than 10 cm can overstretch the

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covering vessel, resulting in the rupture of the feeding vessel; and two, that the myomas can enlarge and split the feeding vessels between the uterine masses. Previous reports have expressed different views [12–14]. One study demonstrated that myomas are usually found in multiparous women between 30 and 49 years old [12]. It has also been postulated that increased abdominal pressure can cause passive congestion and rupture of the superficial veins [13]. A recent study has shown that the risk of rupture is independent of age, parity, and size of the leiomyoma [14]. Our patient did not have a significant risk factor, therefore the diagnostic challenge.

Imaging tools, including ultrasound and computed tomography scans, might help confirm the differential diagnosis, because the presence of free fluid in the peritoneal cavity, and abdominal pain and unstable vital signs are suggestive of the diagnosis of hemoperitoneum, but all of these tools still failed to detect the origin of the hemorrhage.

Management of similar cases includes stabilizing the vital signs and urgent diagnostic laparoscopy. The laparoscopic approach is highly recommended in cases of acute abdomen with an uncertain diagnosis [4,15]. After accurate diagnosis, laparoscopic techniques can be directly applied in management, including hemostatic sutures, myomectomy, and even hysterectomy.

In conclusion, rupture of a covering vessel overlying a uterine leiomyoma should be included in the differential diagnosis of abdominal pain and hemoperitoneum in women with a large abdominal tumor, although this is extremely rare. An early laparoscopic approach might be considered in cases of uncertain acute abdomen with stable vital signs.

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## References

- [1] Horng HC, Wen KC, Su WH, Chen CS, Wang PH. Review of myomectomy. *Taiwan J Obstet Gynecol* 2012;51:7–11.
- [2] Su WH, Lee WL, Cheng MH, Yen MS, Chao KC, Wang PH. Typical and atypical clinical presentation of uterine myomas. *J Chin Med Assoc* 2012;75:487–93.
- [3] Su WH, Cheung SM, Chang SP, Lee WL. Internal bleeding from a ruptured serosal vein covering the myoma surface mimicking upper gastrointestinal bleeding. *Taiwan J Obstet Gynecol* 2008;47:352–4.
- [4] Horng HC, Wang PH. Ovarian cancer presenting as an acute abdomen was successfully diagnosed and managed by laparoscopy. *Taiwan J Obstet Gynecol* 2012;51:146–7.
- [5] Fang FY, Huang BS, Chao HT, Wang PH. Ruptured ovarian endometrioma. *Taiwan J Obstet Gynecol* 2012;51:145.
- [6] Huang BS, Wang PH. Ovarian torsion during pregnancy. *Taiwan J Obstet Gynecol* 2011;50:409–10.
- [7] Tsai HW, Chen YJ, Ho CM, Hseu SS, Chao KC, Tsai SK, et al. Maneuvers to decrease laparoscopy-induced shoulder and upper abdominal pain: a randomized controlled study. *Arch Surgery* 2011;146:1360–6.
- [8] Wu KY, Lertvikool S, Huang KG, Su H, Yen CF, Lee CL. Laparoscopic hysterectomies for large uteri. *Taiwan J Obstet Gynecol* 2011;50:411–4.
- [9] Chen CH, Lee WL, Chiu LH, Sun HD, Liu WM, Wang PH. A cohort study to evaluate the effectiveness of laparoscopic-guided local injection with etoposide in the management of women with unruptured tubal pregnancy. *Fertil Steril* 2011;96:654–8.
- [10] Li KC, Huang CY, Wang PH. Parasitic peritoneal leiomyomatosis mimicking intra-abdominal abscess with hematoma. *Taiwan J Obstet Gynecol* 2012;51:115–6.
- [11] Horowitz E, Dekel A, Feldberg D, Rabinerson D. Massive hemoperitoneum due to rupture of an artery overlying a uterine leiomyoma: a case report. *Acta Obstet Gynecol Scand* 2005;84:408–9.
- [12] Mattison DR, Yeh SY. Hemoperitoneum secondary to rupture of a uterine vein overlying a leiomyoma. *Am J Obstet Gynecol* 1980;136:415–6.
- [13] Danikas D, Theodorou SJ, Kotrotsios J, Sills C, Cordero PE. Hemoperitoneum from spontaneous bleeding of uterine leiomyoma: a case report. *Am Surg* 1999;65:1180–2.
- [14] Dahan MH, Ahmadi R. Spontaneous subserosal venous rupture overlying a uterine leiomyoma. *J Reprod Med* 2002;47:419–20.
- [15] Sun HD, Huang BS, Chao HT, Ng HT, Wang PH. Tuberculosis peritonitis. *Taiwan J Obstet Gynecol* 2012;51:1–2.