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Case Report

Massive Intraperitoneal Hemorrhage and Hypovolemic Shock due to Rupture of a Coronary Vessel of a Uterine Leiomyoma: A Report of Two Cases

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AKAHIRA, J., ITO, K., NAKAMURA, R. and YAJIMA, A. *Massive Intraperitoneal Hemorrhage and Hypovolemic Shock due to Rupture of a Coronary Vessel of a Uterine Leiomyoma: A Report of Two Cases.* Tohoku J. Exp. Med., 1998, **185** (3), 217-222 —— Intraperitoneal hemorrhage due to uterine leiomyoma is extremely rare. Recently, we encountered such two cases and herein describe them. Case 1 involved a 34-year-old, nulliparous woman referred to our hospital because of a sudden onset of shock while she was playing a softball game. She had a large abdominal tumor and a hemoperitoneum, and was diagnosed as having a ruptured ovarian tumor. Exploratory laparotomy showed a rupture of the coronary vein of a large uterine leiomyoma. The patient was treated with myomectomy and did well postoperatively. Case 2 involved a 44-year-old, multiparous woman referred to our hospital because of sudden onset of lower abdominal pain while defecating. She had a uterine leiomyoma and a hemoperitoneum, and was diagnosed as having a ruptured splenic artery. Exploratory laparotomy showed rupture of the coronary artery of a uterine leiomyoma. The patient was treated with total abdominal hysterectomy and did well postoperatively. These cases suggest that intraperitoneal hemorrhage associated with uterine leiomyoma, although rare, should be considered in women with hypovolemic shock and a large pelvic mass. ——
uterine leiomyoma; uterine fibroid; intraperitoneal hemorrhage; hypovolemic shock

Because uterine leiomyomas are the commonest tumors in women, their behavior and complications are well recognized. The most frequently encountered complications involve excessive genital bleeding such as menorrhagia, metrorr-

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hagia, postmenopausal bleeding, or dysmenorrhea. Intraperitoneal hemorrhage due to rupture of a coronary vessel on the surface of a leiomyoma is one of the rarest complications. In the past 5 years, two such cases have been documented at exploratory laparotomy in the department of Obstetrics and Gynecology at Towada Municipal Central Hospital, Aomori, Japan. In this report, we describe these two cases and review the literature on this complication.

Case Reports

Case 1

A 34-year-old, nulliparous Japanese woman was transported to our hospital by ambulance on July 7, 1995, because of sudden onset of shock while she was playing a softball game. Her last menstrual period had started on June 13 and lasted 5 days. She had a regular 30-day cycle and had become aware of abdominal distension during menstruation for the last 3 months. Her past medical and surgical history was noncontributory and no history of leiomyomas was elicited.

On admission to the hospital, she was afebrile and very pale; a pulse of 120 / minutes and systolic blood pressure of 60 mmHg suggested hypovolemic shock. A pregnancy test was negative. The abdomen was distended and mild tenderness and rebound were found in all quadrants. Emergency computed tomography (CT) revealed a large mass that occupied most of the abdominal cavity (Fig. 1), and intraperitoneal hemorrhage was subsequently confirmed by aspiration of the peritoneal cavity.

The patient was taken to the operating room with a presumed diagnosis of ruptured ovarian tumor. At laparotomy, the abdomen contained approximately

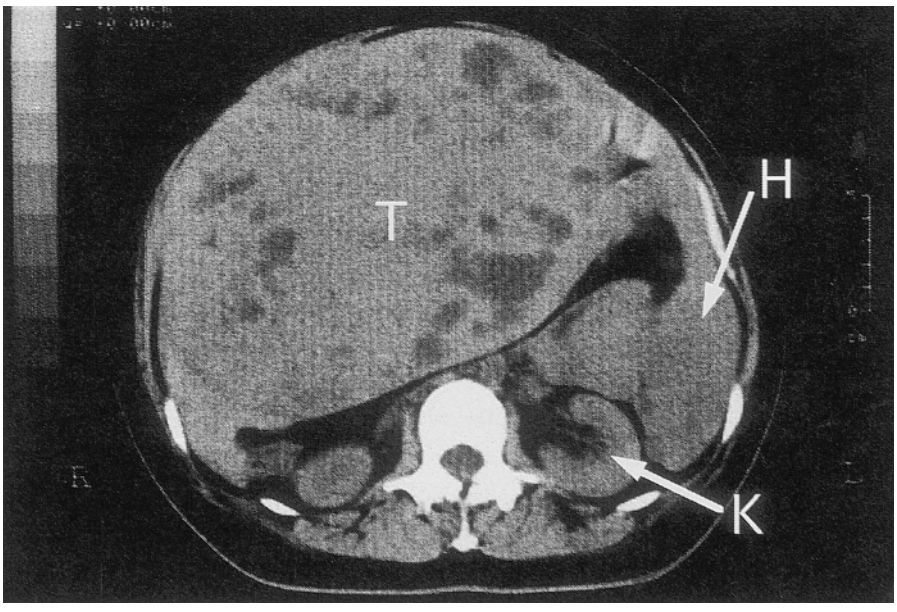

Fig. 1. Abdominal CT of case 1
The tumor (T) occupied almost whole abdominal cavity and intraperitoneal hemorrhage (H) was recognized. Kidney (K) was depicted at the same level.

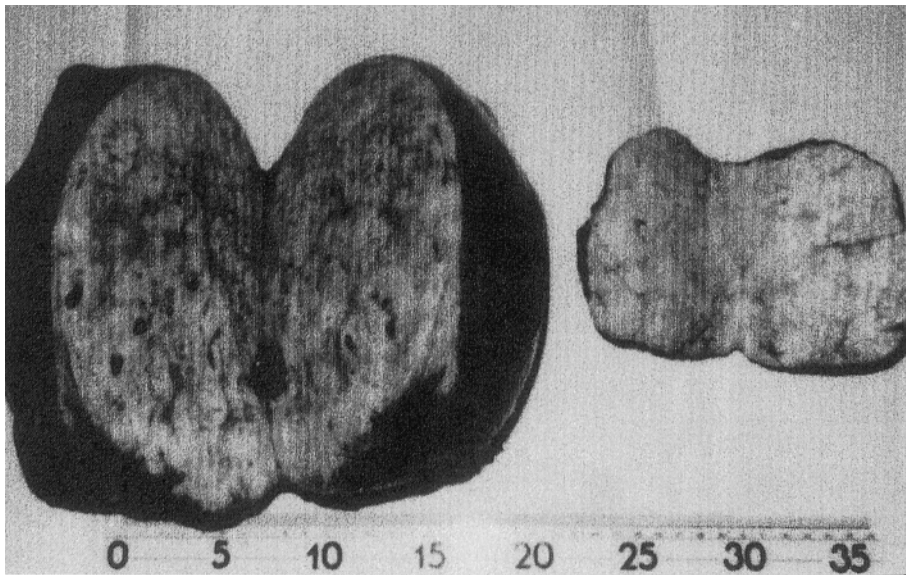

Fig. 2. Resected uterine leiomyomas of case 1
The larger leiomyoma was 3812 g and the smaller one was 486 g in weight. A vein on the surface of the larger one was ruptured.

3000 ml of clotted and unclotted blood. Pelvic exploration showed an extremely large leiomyoma at the uterine fundus and a smaller one at the posterior fundus. There was a tear in one of the veins overlying the posterior part of the larger leiomyoma, with a steady flow of blood from it. No other source of bleeding was encountered. After rapid suture of the ruptured vein, myomectomy was carried out and the two leiomyomas were removed. The patient was transfused with a total of 2200 ml of packed red blood cells from the time of admission to the end of the operation. Her postoperative course was uneventful.

The larger specimen measured 22 cm in diameter and weighed 3812 g (Fig. 2). Microscopic evaluation revealed uniform smooth muscle fibers with hyalinosis but without cellular atypia or mitotic activity.

Case 2

A 44-year-old, gravida 2 para 2 Japanese woman was transported to our hospital by ambulance on December 31, 1997, because of sudden onset of lower abdominal pain while defecating. There was no history of trauma, and recent possibility of pregnancy was denied. Her last menstrual period had started on December 13 and lasted 7 days. She had a regular 28-day cycle of menstruation, her past medical and surgical history was noncontributory and no history of leiomyomas was elicited.

On admission to the hospital, she was afebrile and very pale; a pulse of 110/minute and systolic blood pressure of 60～80 mmHg suggested hypovolemic shock. The hemoglobin level on admission was 84 mg/ml. A pregnancy test was negative. The abdomen was distended with generalized tenderness and rigidity. Emergency CT revealed a uterine leiomyoma, and intraperitoneal hemorrhage was

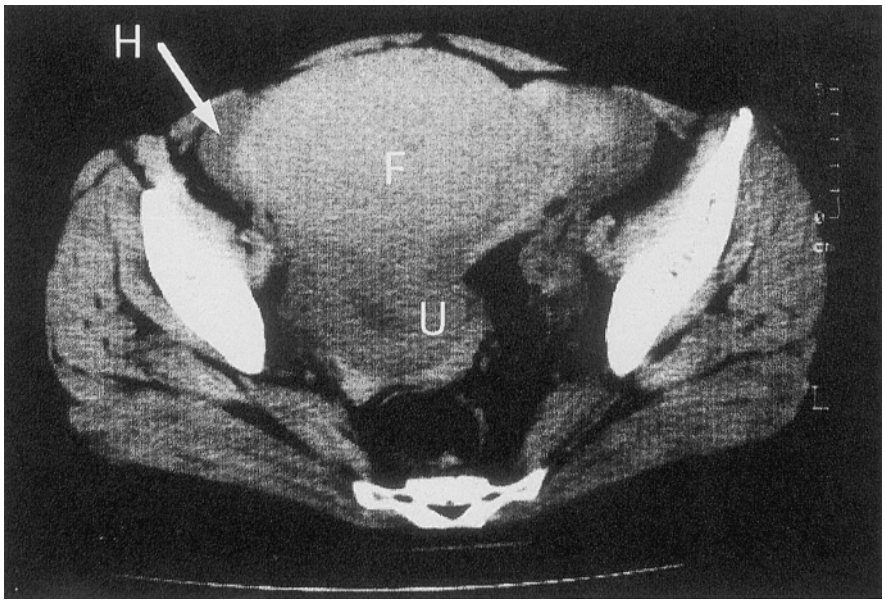

Fig. 3. Pelvic CT of case 2
A large leiomyoma (F: fibroid) was existed on fundus of the uterine body (U) and intraperitoneal hemorrhage (H) was recognized.

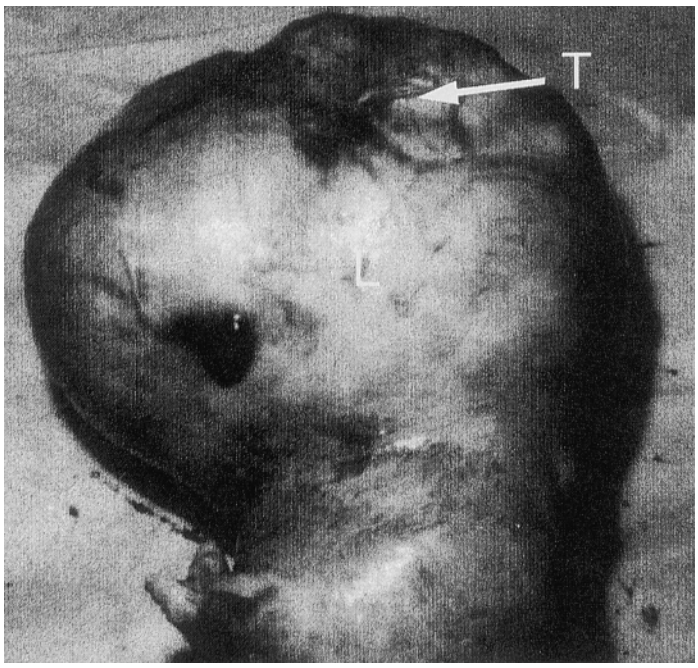

Fig. 4. Resected uterus of case 2
Uterus was 740 g in weight and a leiomyoma (L) was over fist in size. The ruptured artery was tied (T) and knot was on the fundus of leiomyoma.

subsequently confirmed by aspiration of the peritoneal cavity (Fig. 3).

After admission, the patient's hemoglobin continued to fall to a minimum of 56 mg/ml. After transfusion of 600 ml of packed red blood cells, she was taken to the operating room with a presumed diagnosis of rupture of the splenic artery. At laparotomy, the abdomen contained about 2000 ml of clotted and unclotted blood. Pelvic exploration revealed an over-fist-sized leiomyoma at the uterine

fundus and arterial hemorrhage from the top of the leiomyoma (Fig. 4). No other source of bleeding was encountered. After rapid suture of the vessel, total hysterectomy was performed without difficulty. The patient was transfused with a total of 1400 ml of packed red blood cells from the time of admission to the end of the operation. Her postoperative course was uneventful.

Microscopic evaluation revealed uniform smooth muscle fibers with central areas of degeneration but without cellular atypia or mitotic activity.

Discussion

Intraperitoneal hemorrhage from uterine leiomyomas is extremely rare despite the fact that this is the most common tumor in the uterus. Saidi et al. (1961) reviewed approximately 50 cases reported before 1961 and, to the best of our knowledge, there were only four case reports from 1961 to 1997 (Badawy 1961; Mattison and Yeh 1980; Bell 1990) (Table 1). Five of the most recent six cases, including our present cases, involved multiparous women, between the ages of 30 and 49 years, as described by Deopuria (1970). Most patients presented with sudden onset of abdominal pain and some collapsed immediately after the pain began.

Various factors were considered responsible for rupture of the vessels. Increased congestion of a superficial vein of the leiomyoma, due to increased abdominal pressure, menstruation or pregnancy, has been proposed as the cause (Saidi et al. 1961; Deopuria 1970). Deopuria (1970) reported that 11 women were menstruating and 15 were pregnant out of 64 patients, at the time of onset of this complication. Of our patients, one had been playing a vigorous sport while the

Table 1. *Cases reported from 1961 to 1997*

Author	Age (years)	Parity	Menstrual history	Symptom	Precipitate factor	Preoperative diagnosis	Operation performed	Result
Badawy (1961)	22	1	atypical bleeding	abdominal pain	defecation	ectopic pregnancy	myomectomy	recovered
Mattison and Yeh (1980)	45	1	6th day of menses	abdominal pain	none	ectopic pregnancy	total hysterectomy	recovered
Mattison and Yeh (1980)	49	2	first day of menses	abdominal pain	none	rupture of uterine vein	total hysterectomy	recovered
Bell (1990)	39	2	5th day of menses	seizure	none	ectopic pregnancy	myomectomy	recovered
Present case 1	34	0	normal menses completed	shock	exercise	rupture of ovarian tumor	myomectomy	recovered
Present case 2	44	2	normal menses completed	abdominal pain	defecation	rupture of splenic artery	total hysterectomy	recovered

other fainted after defecation. Thus, increased abdominal pressure may have been present while exercising or defecating, but neither patient was menstruating or pregnant at the time of rupture.

It is difficult to make a correct preoperative diagnosis in such an emergency condition. The triad of abdominal pain, vaginal bleeding and hypotension in a woman of childbearing age always suggests ectopic pregnancy as shown in Table 1. Ultrasonography and CT scan of the abdomen are helpful in diagnosing hemoperitoneum but it may be difficult to detect the origin of the hemorrhage. In both cases reported here, ectopic pregnancy was excluded, but in one case we could not diagnose the tumor as a uterine leiomyoma preoperatively because it was extremely large, while in the other case, this rare complication was not under consideration before surgery. Rupture of a coronary vessel overlying uterine leiomyoma should be included in the gynecologists' and emergency physicians' differential diagnosis of abdominal pain and unexplained hemorrhagic shock in women with a large abdominal tumor. Prompt surgical intervention is essential for making a definitive diagnosis and saving the patient's life.

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