

## Our strategy in a patient with spontaneous retroperitoneal hemorrhage and deep venous thrombosis of the left lower extremity

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### ABSTRACT

A 47-year-old female was admitted to our clinic with severe pain in the lower abdomen, lumbar region, and left lower extremity. Contrast-enhanced computed tomography showed an irregular and heterogenous soft tissue mass in the inferior of left kidney, and pelvic varicosities. Emergency exploratory laparotomy revealed multiple venous bleeding in the pelvic veins and left internal iliac vein. Bleeding from veins was unable to be stopped by direct suturing. Therefore, distal of the left common iliac vein, proximal of the left external iliac vein, and left internal iliac vein were ligated. The postoperative follow-up period was uneventful. In conclusion, retroperitoneal venous hemorrhage accompanied by deep venous thrombosis of the lower extremity is a serious condition with high morbidity and mortality. Timely surgical and medical treatment is life-saving.

**Keywords:** Deep venous thrombosis, spontaneous retroperitoneal hemorrhage, surgery.

Spontaneous rupture of the iliac and pelvic veins and deep venous thrombosis (DVT) is a very unusual, but life-threatening event, requiring a prompt surgical management of the bleeding region and anticoagulant treatment of DVT.<sup>[1]</sup>

In this article, we present an adult female case of spontaneous retroperitoneal hemorrhage and DVT of the left lower extremity which were successfully treated with surgery.

### CASE REPORT

A 47-year-old female was referred to our hospital from an external center with severe pain in the lower abdomen, lumbar region, and left lower extremity. The left lower extremity swelling up to the groin was visible. The distal pulses of both lower extremities were normal and equal. Her medical history revealed no venous symptoms or

prolonged immobilization, leg trauma, or any other risk factor for venous thrombosis. The patient was not receiving anticoagulant and antiplatelet therapy or hormonal replacement therapy. Cardiovascular and other system examination findings were unremarkable. Contrast-enhanced computed tomography (CT) showed an 8 to 10-cm irregular and heterogenous soft tissue mass in the inferior of left kidney, and pelvic varicosities (Figure 1). A color Duplex ultrasonography demonstrated DVT involving the left common femoral, superficial femoral, popliteal, peroneal, and gastrocnemius veins in the left lower extremity. Laboratory analysis results were as follows: D-dimer 3,000 ng/mL, hemoglobin 6 g/dL, and hematocrit 28%. Her blood pressure reduced to the 90/55 mmHg and heart rate was 106 bpm. She was immediately taken to the operation room. Emergency exploratory laparotomy was performed under general anesthesia through

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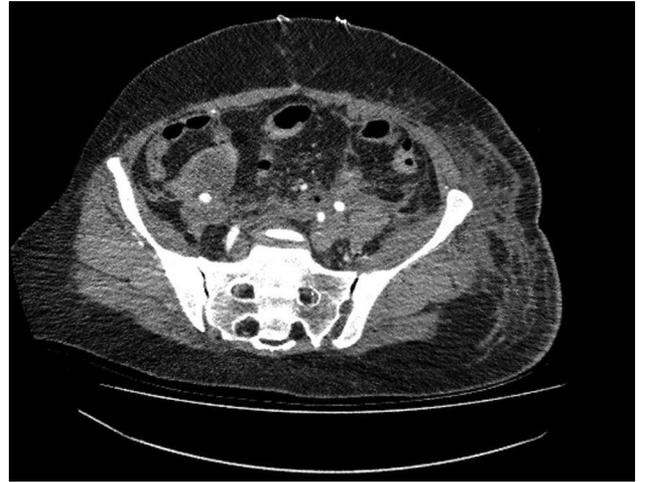
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**Figure 1.** Preoperative contrast-enhanced computed tomography showing retroperitoneal hematoma in the inferior of left kidney and pelvic varicosities.



**Figure 2.** Postoperative contrast-enhanced computed tomography showing retroperitoneal region.

a midline abdominal incision, extending from the xiphoid to the symphysis. The retroperitoneal cavity was explored and, then, hematoma was evacuated. Retroperitoneal organs were explored. The abdominal aorta and intraperitoneal solid organs were intact. The retroperitoneal region was immediately pressured by surgical compression due to the abundant amount of bleeding. The location of bleeding was searched meticulously. Multiple venous bleeding was seen in the pelvic veins and left internal iliac vein. Bleeding from the ruptured pelvic veins and internal iliac vein were unable to be stopped by direct suturing. Therefore, distal of the left common iliac vein, proximal of the left external iliac vein, and left internal iliac vein were ligated and bleeding was stopped. A Hemovac drain was placed to the left Douglas cavity. A total 350 mL drainage fluid was collected within three days of surgery. The Hemovac drain was removed on postoperative Day 4. A total of seven units of red blood cells and 1,500 mL of fresh frozen plasma were infused during the hospitalization period. Anticoagulation therapy was initiated 24 h after the operation.

The patient was anticoagulated with low-molecular-weight heparin. The mobilization of the patient was confined, and left lower extremity was elevated during the postoperative period. Vital signs were monitored by electrocardiographic and blood pressure monitoring for several days. The left lower extremity distension gradually diminished with anticoagulant treatment, elastic stocking, and venoactive drugs. The patient was discharged on postoperative Day 15. She was scheduled for follow-up

by color Duplex ultrasound and contrast-enhanced CT at one, three, and six months (Figure 2). The patient's postoperative follow-up period was uneventful. A written informed consent was obtained from the patient.

## DISCUSSION

Spontaneous rupture of the iliac and pelvic veins and DVT typically affect middle-aged women and significantly occur in the left iliac vein system.<sup>[1]</sup> Until now, several theories have been suggested to explain the etiology of the disease. Particularly, one of the important causes of DVT in childbearing age is multiple pregnancies. As the increasing intravascular volume and growing uterus may compress the iliac veins, venous dilatation and valvular defect may occur.<sup>[1]</sup> Prolonged venous dilatation causes inflammation. Exposing to estrogen is also known to weaken veins and induces venous dilatation through nitric oxide release, whereas progesterone weakens venous valves, which may collectively promote the development of incompetent pelvic veins and subsequent reflux.<sup>[2]</sup> Young women with multiple pregnancies may suffer from pelvic pain.<sup>[2]</sup>

A possible cause of spontaneous rupture of an iliac vein is a sudden rise in venous pressure, overstretching the venous wall, and exceeding its resistance. This is illustrated in some of the case reports involving coughing, defecation, delivery, childbirth or bending.<sup>[3]</sup>

The inflammatory factors related to conditions such as DVT or thrombophlebitis can also contribute to the progression of the disease by causing loss of vessel's all elasticity due to chronic inflammation.<sup>[1]</sup> In patients taking estrogen treatment, DVT may occur due to the effect of hypercoagulability of estrogen.<sup>[1]</sup> Increased pressure in the pelvis due to a neoplasm can be another potential predisposing factor.<sup>[4]</sup>

Another argument in favor of venous hypertension is reported by four authors, describing partial outflow obstruction of the iliac vein by segmental thrombosis, compression between the iliac artery and the sacral promontory, or an endothelial membrane.<sup>[5]</sup>

The most common signs include sudden onset with lower extremity pain and swelling, lower abdominal pain, a non-pulsatile abdominal mass, and hypotension. Similarly, our patient had DVT of the left lower extremity, and pelvic varicosities, as evidenced by contrast-enhanced CT. In some cases, the most possible cause of venous rupture can be a sudden increased intraluminal venous pressure due to coughing, defecation, or bending.

The major measures to be taken in the management of this disease are the treatment of hemorrhagic shock and repair of the ruptured vessel through emergency laparotomy. If the tear of the vessel cannot be repaired, a possible alternative is bypass reconstruction or ligation of the ruptured vein or endovascular stenting application.<sup>[1,3,6]</sup> In our patient, bleeding from the ruptured pelvic veins and internal iliac vein was unable to be stopped by direct suturing. Therefore, bleeding was controlled with ligation. Based on our experience,

anticoagulation should be also started early, once bleeding is controlled. A compression stocking and extremity elevation are also helpful in the treatment of the DVT.<sup>[6]</sup>

In conclusion, retroperitoneal venous hemorrhage accompanied by DVT of the lower extremity is a serious condition with high morbidity and mortality. Timely surgical and medical treatment is life-saving.

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