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A 39-Year-Old Woman with Endometriosis Who Developed a Subcapsular Liver Hematoma Following Laparotomic Surgical Left Adnexectomy, Rectosigmoid Anastomosis, and Bilateral Ureteral Reimplantation

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Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Female, 39-year-old
Final Diagnosis: Subcapsular hepatic hematoma
Symptoms: Altered coagulation with Quick index • impaired renal function • impaired respiratory pattern • significantly increased liver enzymes
Clinical Procedure: —
Specialty: Obstetrics and Gynecology

Objective: Diagnostic/therapeutic accidents

Background: Endometriosis is a chronic inflammatory disease caused by endometrial tissue that grows outside the uterus. Deep endometriosis surgery is associated with considerable rates of complications, although such rates are lower in surgical procedures carried out by expert surgical teams. This report details a case of a rare but life-threatening complication in the postoperative period following 72 h of endometriosis surgery: a giant subcapsular hepatic hematoma, which was successfully managed conservatively.

Case Report: Here we describe the case of a 39-year-old woman with deep endometriosis with ureteral, ovarian, and intestinal involvement requiring multidisciplinary surgery. She presented with severe anemia, respiratory distress, and oliguria 72 h postoperatively. A 3-phase computed tomography (CT) scan revealed a giant intrahepatic subcapsular hematoma (180×165×50 mm) lateral to the right hepatic lobe, which was managed conservatively. The patient evolved favorably and the hematoma was reduced (77×16 mm) in a follow-up CT scan performed 5 months later.

Conclusions: Giant liver hematoma is a rare, life-threatening complication. The current experience relating to its management remains largely limited owing to the rarity of the condition and paucity of published cases. Actually, we found no articles on hepatic hematoma in the context of endometriosis surgery. Early diagnosis and treatment are essential to reduce the patient's risk of death. Imaging diagnosis plays an essential role.

Keywords: Endometriosis • Hematoma • Postoperative Complications
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Background

Endometriosis is a chronic inflammatory disease caused by endometrial tissue that grows outside the uterus. This tissue grows in an estrogen-dependent way and can spread into the peritoneum or the ovaries and, in cases of deep endometriosis, to the bladder, ureters, or intestine [1]. A proportion of 12% to 37% women with deep endometriosis show gastrointestinal involvement [2], which most frequently affects the rectosigmoid segment. About 1% of them show ureter involvement, which mostly affects the distal third up to 4 cm above the ureterovesical junction. Involvement is generally unilateral, often affecting the left side, and can produce ureterohydronephrosis and impaired kidney function [3].

Deep endometriosis surgery is associated with considerable rates of complications, although such rates are lower in surgical procedures conducted by expert surgical teams [4]. The described complications that are associated with the radicality of this surgery include ovarian reserve loss, urinary retention, ureter fistula, ureteral stenosis, vesicovaginal fistula, rectovaginal fistula, rectal stenosis, rectal perforation, perineal abscess, leakage, and dehiscence of intestinal anastomosis, especially in case of lower large bowel resection [5-8].

Intrahepatic subcapsular hematoma is a rare, life-threatening complication of surgery. Several cases have been described in the literature in association with different digestive surgical procedures, with complications occurring soon after surgery or several weeks later [9-12]. However, to the best of our knowledge, no such cases have been reported in the context of endometriosis surgery. The exceptional nature of this case makes it interesting for publication.

Case Report

A 39-year-old woman with a history of laparoscopic right annexectomy for endometriosis at age 22 years and a cesarean section at age 37, presented with anomalous menstrual bleeding related to contraceptive pill intake. She also reported that she was under urologic follow-up for right ureterohydronephrosis secondary to right ureter stenosis and that she had needed placement of a double J catheter in that ureter on several occasions, as well as balloon dilation of the stenosed area. She provided a creatinine laboratory test result of 1.16 mg/dL (0.55-1.02 mg/dL).

Vaginal ultrasound showed uterine forced retroflexion (64×37×48 mm) with signs of diffuse adenomyosis, a typical endometrioma on the left ovary (20 mm), a nodule of infiltrating deep endometriosis (56×7 mm) in the rectosigmoid region, which did not involve the intestinal lumen but involved the right uterosacral ligament, and grade II right utererohydronephrosis (**Figure 1**).

Oral contraceptives were discontinued, and she received a levonorgestrel intrauterine device (20 mcg/24 h; Mirena IUD, Bayer Hispania S.L., Bayer, Munich, Germany) until surgery was scheduled. In less than 4 months, the patient was admitted for left flank pain of increasing intensity, which did not subside with usual analgesic therapy (paracetamol and non-steroidal anti-inflammatory drugs). She had no fever or clinical signs of urinary infection. Laboratory test results were hemoglobin level of 12 g/dL (12-17 g/dL), 13 500 leukocytes/mL (4500-10.800 leukocytes/mL), C-reactive protein level of 8.4 mg/dL (<0.50 mg/dL), normal procalcitonin level, creatine level of 1.27 mg/dL (0.55-1.02 mg/dL), normal coagulation, and negative results of urine culture. A computed tomography (CT) scan revealed left endometrioma (120×100 mm)

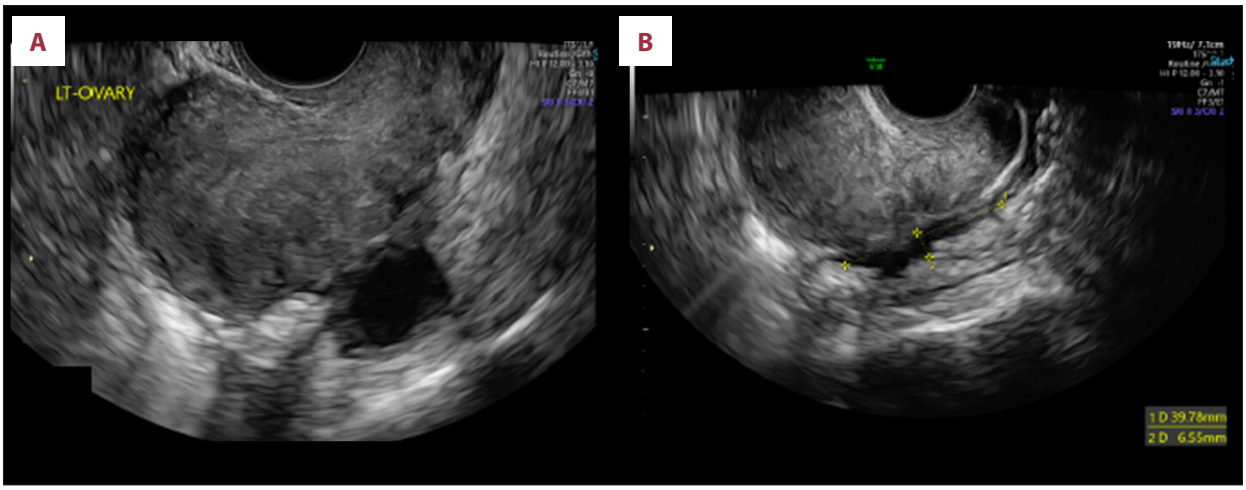

Figure 1. Vaginal ultrasound. Uterine forced retroflexion with signs of diffuse adenomyosis and a typical endometrioma on the left ovary (20 mm) (**A**). A nodule of infiltrating deep endometriosis in the rectosigmoid region (**B**).

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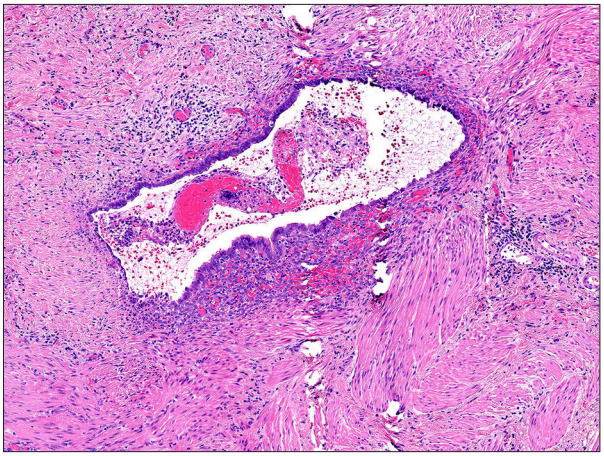

Figure 2. A photomicrograph of the histopathology of the ureter showing a focus of endometriosis. A dilated endometrial gland is shown, surrounded by stroma. No cytological atypia is seen and there are no other features of malignancy. Hematoxylin and eosin staining; magnification ×40.

and grade III left ureterohydronephrosis of new onset, plus the already known grade II right ureterohydronephrosis. In addition, the right kidney was reduced in size, compared with the contralateral one, and showed slight cortical thinning at the upper pole. Serum marker levels were CA125 of 110.7 U/mL (0.0-35 U/mL) and HE4 of 81.3 pmol/L (0.0-70 pmol/L).

Double J catheters were placed in both ureters under radiological monitoring. One week later, a multidisciplinary team, including a gynecologist, urologist, and general surgeon, performed infraumbilical laparotomy for left annexectomy, anterior segmental resection, and rectosigmoid termino-terminal anastomosis, with release of both ureters, which were dilated, and bilateral ureteral reimplantation (**Figure 2**). During the same surgical procedure, the double J catheters were replaced, after which, unclear urine with an appearance of infection was observed. The patient was administered intravenous (i.v.) antibiotic treatment, and a urine culture was done, which yielded positive results for *Escherichia Coli*.

After surgery, the patient was admitted to the Resuscitation Unit; she was conscious, oriented, extubated, and with normal vital signs. Six hours after surgery, control laboratory test results showed hemoglobin level of 7.8 g/dL (12-17 g/dL), 31 000/mL leukocytes (4500-10 800 leukocytes/mL), procalcitonin level of 4.1 ng/mL (0.0-0.50 ng/mL), and altered coagulation, with a Quick index of 64% (70-130%). Sepsis of urinary origin was diagnosed, and the patient received a blood transfusion, fluid therapy, and antibiotics (piperacicllin-tazobactam 4 g i.v. every 8 h and cirpofloxacin 400 mg i.v. every 12 h) and showed favorable evolution to hemodynamic stability and normal diuresis without pain. However, 72 h after surgery, she presented an impaired respiratory pattern, impaired renal function, with creatinine level of 2.34 mg/dL (0.55-1.02 mg/dL), anemia, with hemoglobin level of 6.5 g/dL (12-17 g/dL), altered coagulation, with a Quick index of 56% (70-130%), and significantly increased liver enzymes: GOT (AST) 7462 U/L (5-31 U/L), GPT (ALT) 3310 U/L (0-34 U/L), GGT 120 U/L (0-55 U/L), alkaline phosphatase 213 U/L (30-120 U/L), and normal bilirubin. She was administered blood and fluids and underwent an emergency 3-phase CT scan, which revealed an acute-subacute hepatic subcapsular hematoma (185×165×50 mm) without active bleeding (**Figure 3**).

With the adjustment of ventilatory support and with blood transfusion and hydrolectrolytic supplementation, the patient progressively improved and remained hemodynamically stable.

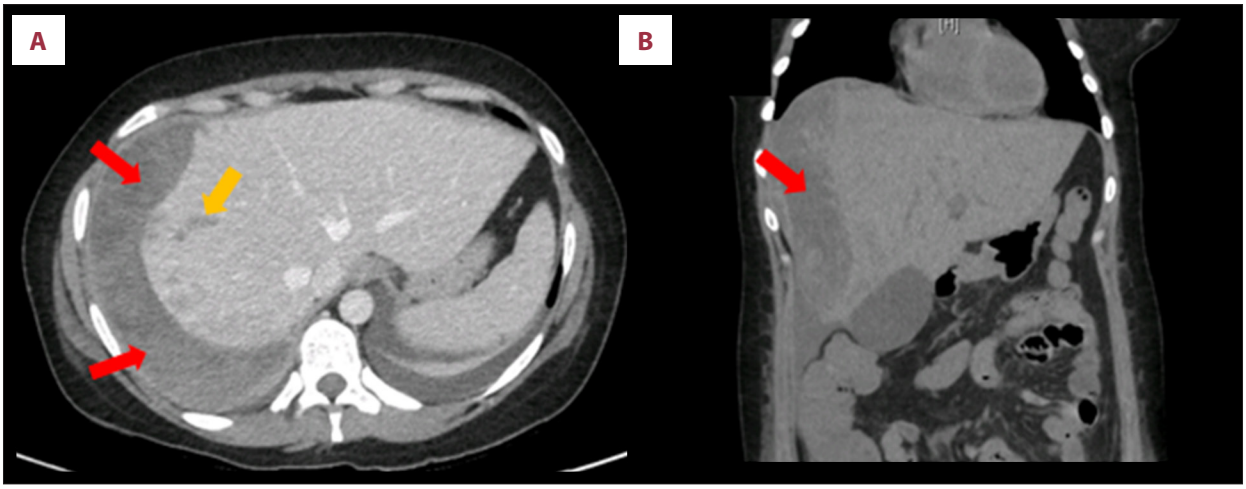

Figure 3. Abdomen-pelvis computed tomography scan without contrast. Axial plane (**A**); coronal plane (**B**). Acute-subacute hepatic subcapsular hematoma of 185CC×165AP×50T mm (red). Several liver injuries, the largest one 55 mm long (yellow). Moderate amount of fluid in the subhepatic, right parietocolic, and pelvic areas.

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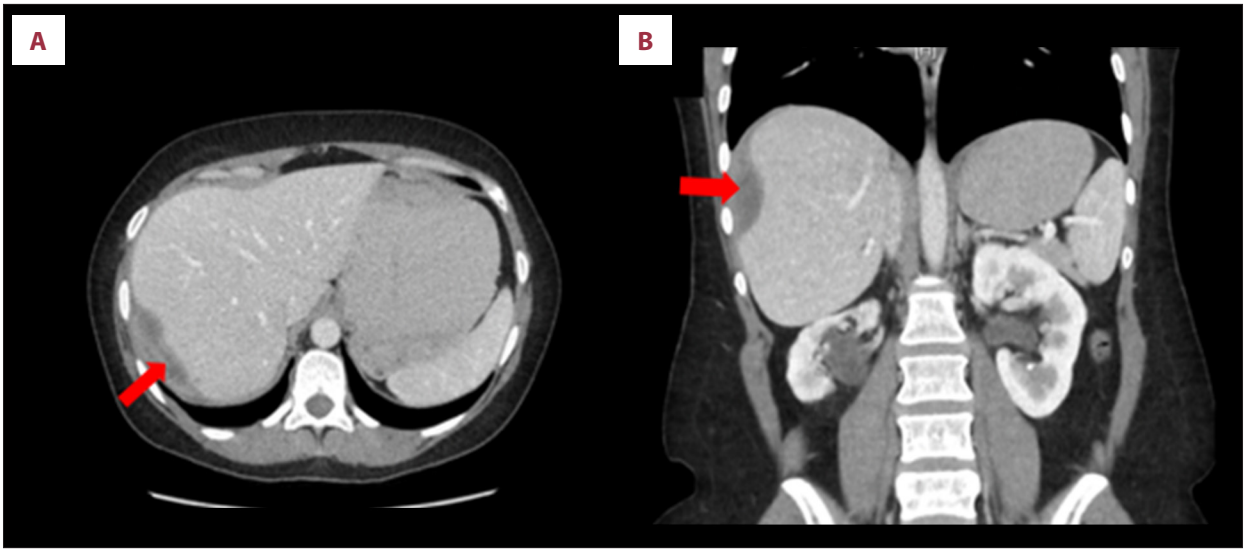

Figure 4. Abdomen-pelvis computed tomography (CT) scan without contrast. Axial plane (**A**); coronal plane (**B**). Significant radiological improvement of hepatic subcapsular hematoma, compared with previous CT scan results; dimensions 77.6CC×45AP×16T. No free fluid.

Thus, the general surgery team agreed to conservative management. During the following 48 h, a markedly improved liver enzyme profile (GOT 438 U/L, GPT 1284 U/L) and hemodynamic stability were observed. The patient stayed in hospital for 16 days on broad-spectrum antibiotic therapy: 7-day course of i.v. piperacillin-tazobactam with ciprofloxacin i.v. regimen, and after that, 9 days with meropenem 1 g i.v. every 8 h, linezolid 600 mg i.v. every 12 h, and close clinical monitoring. Five months after hospital discharge, she was completely asymptomatic, and a control CT scan showed a significant reduction of the hepatic subcapsular hematoma (77×45×16 mm; **Figure 4**).

Discussion

Surgery for deep endometriosis is a complex procedure that is not free of complications. Our patient, however, did not present any of the complications most commonly associated with this surgery, but instead had an exceptional one, a giant intrahepatic subcapsular hematoma, which probably originated from iatrogenic liver trauma.

Intrahepatic subcapsular hematoma is a rare complication of surgery that can be life-threatening in cases of massive bleeding secondary to its rupture. Surgery-related cases described in the literature correspond to different laparoscopic procedures, such as cholecystectomy, adrenal resection, and laparoscopic Nissen fundoplication, and they occurred both in the early postoperative period (hours or days) or several weeks after surgery [10]. Actually, we found no articles on hepatic hematoma in the context of endometriosis surgery. The management of intrahepatic subcapsular hematoma depends generally on the patient's clinical status and the hematoma size. Treatments range from conservative management with antibiotic therapy, correction of anemia, and rest, to percutaneous ultrasound-guided drainage, selective embolization, laparoscopy, or laparotomy [9].

When ureters are affected by endometriosis, either intrinsically or extrinsically, cytoscopy is usually performed and transureteral catheters placed in order to delimit the ureters' trajectory to ensure their repair or prevent damage from surgery [13]. Like with any other invasive procedures, complications can occur, such as irritation, suprapubic or flank pain, vesicoureteral reflux, hematuria and urinary tract infection, ureteral erosion, catheter migration, or catheter rupture [14]. Only 1 case of hepatic hematoma in the context of ureteral catheter placement was found in the literature. In 2019, Blas et al reported the case of a patient who presented a 150×70×230 mm hepatic subcapsular hematoma on the eighth day after placement of a bilateral double J catheter, which made this procedure the probable origin of the hepatic hematoma [15]. Our patient received double J catheters before surgery, which were replaced during the surgical procedure, because a control CT scan showed that the left one had been inserted low. The position of the new catheters was not checked after surgery.

Like the patient in the case reported by Blas et al, our patient also had a hypotrophic right kidney with a thinned capsule, as evidenced by the preoperative CT scan. In the context of a fragile kidney, the ureteral catheter guidewire inserted during surgery might have perforated the renal capsule and lacerated the adjacent liver capsule. The renal and hepatic capsules are in close contact at the upper renal pole. This hypothesis is

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supported by CT scan findings of several lacerations on the hepatic surface, in addition to the hematoma. Also like the patient of Blas et al, our patient presented sepsis of urinary origin and impaired coagulation, which might have promoted liver bleeding.

Unlike the patient of Blas et al, our patient underwent laparotomic surgery, which also may have originated from iatrogenic liver trauma. However, in our opinion, such a situation is improbable since the laparotomic incision was infraumbilical and the hepatic capsule was not reached. If that were the case, right flank paint in the immediate postoperative period would have been expected.

Conclusions

Giant intrahepatic subcapsular hematoma is an extremely rare but life-threatening complication in the postoperative period. The current experience relating to its management remains largely limited owing to the rarity of the condition and paucity of published cases.

Actually, we found no articles on hepatic hematoma in the context of endometriosis surgery. Description of this and other such cases can undoubtedly contribute to the differential diagnosis in similar situations, thus facilitating early diagnosis and treatment, which are essential to reduce the patient's risk of death. Imaging diagnosis plays an essential role. The risks of hematoma rupture should be carefully explained to patients who are considered for a conservative approach.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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