

# A rare cause of hypovolemic shock after cesarean delivery; Rectus sheath hematoma

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## Abstract

Rectus sheath hematoma (RSH) is usually a self-limiting uncommon condition seen under belly. It is very rare that the hematoma reaches the size of a surgical requirement and that it develops as a result of superior epigastric vessel injury. In this case, we presented treatment of RSH which caused hypovolemic shock due to superior epigastric vascular injury and treated with ligation of vessels with intraperitoneal sutures via Phannensteil incision. In conclusion, surgery should be considered in patients with a hematoma that is large enough to cause hemodynamic instability or hypovolemic shock. In these patients, treatment with good cosmetic results can be performed with the same incision with appropriate sutures without forming comorbidity in the patient.

**Keywords:** Cesarean section; hypovolemic shock; rectus sheath hematoma; surgical treatment

## INTRODUCTION

Rectus sheath hematoma (RSH) is a rare cause of abdominal pain characterized by accumulation of blood as a result of damage to the epigastric vessels in the rectus muscle sheath. It rarely develops spontaneously (1). It is most commonly seen on the right side of the umbilicus and is often unilateral (2). Female gender, old age, anticoagulation / antiplatelet therapy, abdominal injections, comorbid conditions such as cough and abdominal traumas are important risk factors (3). It usually develops as a result of posttraumatic or anticoagulant therapy (4,5).

Patients are admitted to the hospital with complaints of abdominal pain. In most cases, surgical intervention is not necessary since the hematoma is self-limited. If the diagnosis is not corrected, unnecessary surgical interventions may cause death even in the presence of comorbidity (6,7). In very few patients, RSH may cause hypovolemic shock or abdominal compartment syndrome depending on the amount of bleeding. Emergency surgery may be life-saving in these patients. With the correct diagnosis and rapid treatment, morbidity, mortality and treatment costs can be reduced (7).

We aimed to present our minimally invasive surgical technique in the case of RSH which is secondary to

superior epigastric vessel damage which is encountered after cesarean section operation.

## CASE REPORT

Thirty-one-year-old, Gravida 3, parity 2 who had two cesarean sections before admitted to the emergency department at 37th gestational week with regular uterine contractions. Body mass index (BMI) was 31, preoperative leukocyte: 10700 /uL, hemoglobin: 11.7 g/dL, platelet: 195300 /uL, activated partial thromboplastin time (aPTT) 33.4 sec, Prothrombin time (PT) was 24.2 sec, INR: 1.0 was established. The patient had no history of systemic disease and she was delivered to a cesarean section (C/S). A 3200 g male infant, first and fifth minute Apgar score 8-10 respectively was delivered. The patient was discharged with a 7-day low molecular weight heparin (LMWH) at the 48th hour following the absence of any problem in the follow-up of the patient who had leukocyte: 10700 /uL, hemoglobin: 11.2 g/dL, and platelet: 189100 /uL. The patient was started postop LMWH because BMI was 31 and emergency C / S was applied.

She was admitted to the emergency service with the complaint of abdominal pain on the postoperative seventh day. In the physical examination; the general situation was moderate-bad, clear was consciousness and she had orientation and cooperation. The patient's skin was cold

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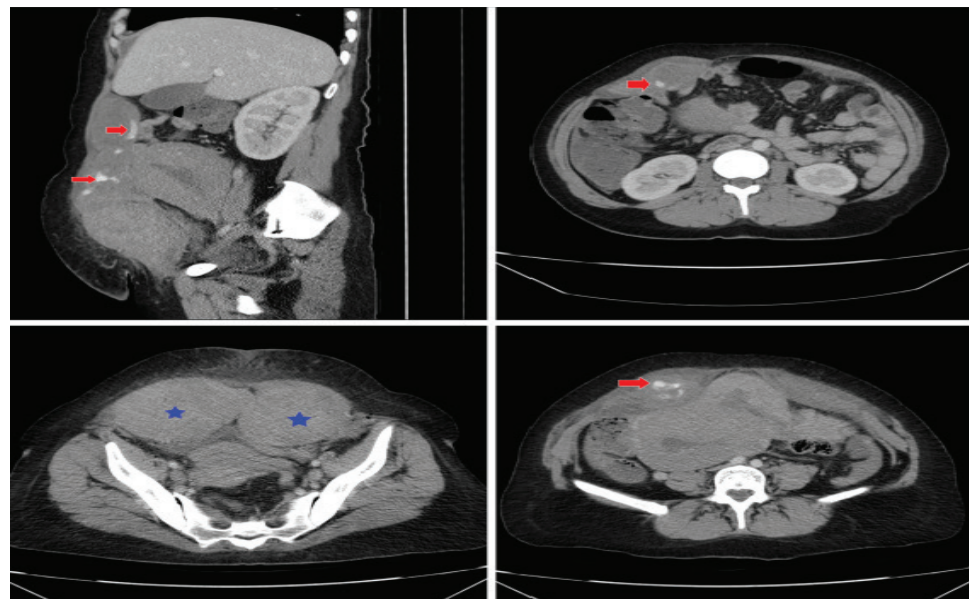
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and pale, her breathing was superficial and tachypneic, and her pulse was filiform. Medical resuscitation was applied to the patient who developed syncope attack during the examination.

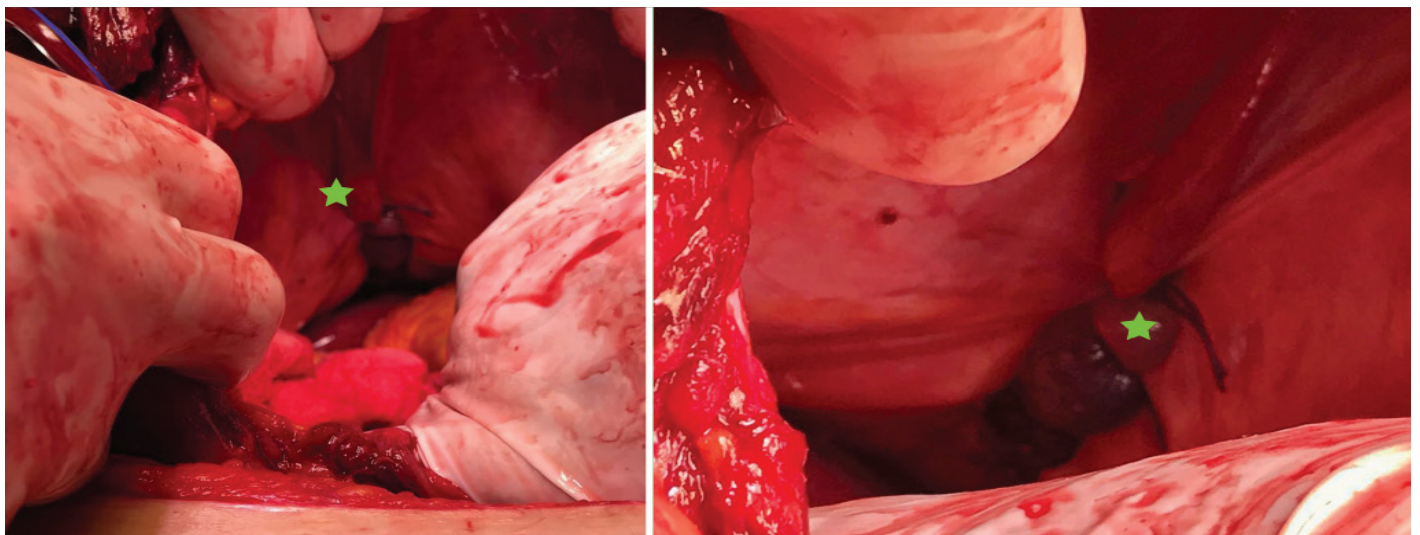
In the emergency evaluation of the patient who regained consciousness after the treatment; blood pressure, pulse, body temperature was 90/50 mmHg, 114 beats/min, and 36.7 °C respectively. Physical examination revealed abdominal tenderness with palpation, voluntary defenses, and anterior mass on the lateral side of the umbilical mass.

Laboratory tests revealed leukocyte: 7300/uL, hemoglobin: 7.7 g/dL, platelet: 160600 /uL, aPTT 43.5 s, PT 33.5 s, INR: 1.1. The abdominopelvic computed tomography of the patient revealed a right side 20x15x5 cm hematoma extending to the right inferior of the liver with a left side 15x10x4 cm hematoma (Figure 1). Erythrocyte suspension

(ES) and fresh frozen plasma (TDP) were prepared and the patient underwent emergency laparotomy with the diagnosis of hypovolemic shock + acute abdomen. Abdomen incision was made from the old incision line and hematomas detected on CT in the rectus sheath were evacuated. The umbilicus level was reached above the rectus muscle. The superior epigastric vessels were ligated with intra-peritoneal sutures on the basis of active bleeding in this region (Figure 2). Bleeding was controlled after vessel ligation. The abdomen was closed by placing hemovac drain on both rectus sheaths. Two units of ES and three units of TDP were administered intraoperatively, and no complication developed in postoperative follow-up period. Postoperative hb was 8.8 and anemia findings were improved, because of that no additional transfusion was considered. The drains were removed on the second postoperative day. The patient was discharged on the third day without any problems.



**Figure 1.** Computed tomography images of the rectus sheath hematoma. In transverse and sagittal sections, extravasation of the radiopaque material (red arrow) and the largest diameter of the hematoma (blue star) is observed



**Figure 2.** Superior epigastric vessel ligation (green stars) was performed without the extension of the Pfannenstiel incision

## DISCUSSION

RSH is one of the rare but clinically important causes of acute abdominal pain. It is more common in patients using LMWH, as in this case (5). It usually does not require surgery because it limits itself. However, in the case of hypovolemic shock and abdominal compartment syndrome, emergency surgery is inevitable. In diagnosis, although it is an important finding that the contrast agent is extravasated in the computed tomography but it does not make the decision of emergency surgery alone because it does not show the severity of the disease (8). In our case, in addition to the extravasation of intravenous contrast agent, emergency laparotomy was performed due to bilateral hematoma, hematoma spreading to the facial plan and hemodynamic instability.

Due to insufficient support at the posterior aspect of the rectus muscle under umbilicus, RSH develops more frequently in the lower quadrant of the abdomen. In this case, although the majority of the mass was below the umbilicus and there was no evidence of active bleeding in the intraoperative observation, the continuation of the bleeding through the umbilicus, and the stopping of the bleeding as a result of ligation of the superior epigastric vessels suggests that the injury was in the superior epigastric vein.

Transcatheter arterial embolization is another option in the treatment of patients (9). Although it is less invasive, it is not very usable at the centers without appropriate infrastructure and in urgent conditions. In these patients with hemodynamic instability, the duration of surgery and the surgical cut place may also have an effect on morbidity. With the smallest (but effective) incision, the quick completion of surgery will contribute positively to the patient. In our case, re-incision place was the previous Pfannenstiel incision in C-section. Although most of the hematoma was under umbilicus, hemorrhage was originated from superior epigastric vessels. Instead of enlarging the surgical incision, bleeding was controlled with intraperitoneal sutures. Thus, both the surgical incision and operation time were shortened.

The reasons for high mortality rates due to surgical treatment can be due to much bleeding disrupting hemodynamics, coagulopathy leading to or following bleeding, and the older age of these patients. Although conservative treatment (blood, plasma, and fluid infusion, cold application, and analgesic) may provide time for patient stabilization in appropriate patients (10), we predict that concurrent surgical treatment in patients with hemodynamic instability will contribute positively to the patient's clinic.

## CONCLUSION

In conclusion, rectus sheath hematoma is a condition that should be managed according to the patients' clinic in high-risk patients who use anticoagulant drugs and apply with abdominal pain. Surgical treatment leads to

rapid recovery of patients and reduction of costs if the patient who has abdominal compartment syndrome or hemodynamic instability is treated at the right time.

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