

## Spontaneous rectus sheath hematoma mimicking acute abdomen

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### ABSTRACT

Rectus sheath hematoma has been described in the past due to various etiologies with varying degrees of severity. It is a rare cause of acute abdomen. Clinical presentation may vary from person to person and based on site of collection and source of bleeding. Various management options including surgical and non-surgical measures have been described and generally present with tenderness with a mass of varying size based on the duration and amount of bleeding. Here, we present the case of a 72-year-old female with acute abdomen on presentation, unstable vitals, and severe pallor. A tender mass over the left lower part of the abdomen was found, and on further evaluation with imaging, the patient was found to have a rectus sheath hematoma. The hematoma was successfully treated with the evacuation of the hematoma and ligation of the bleeding vessel.

**Key words:** Contrast-enhanced computed tomography, Inferior epigastric vessels, Rectus sheath hematoma, Surgery

Sheath hematoma was first described 2500 years ago by Hippocrates and Galen [1]. The first case of rectus sheath hematoma was reported in the modern literature in 1857 [2]. Rectus sheath hematoma denotes a collection of blood in the rectus sheath secondary to disruption of blood vessels coursing through it or injury to the muscle itself. It is a known complication of excessive strain on the abdominal musculature, surgery, and abdominal trauma. The increasing use of anticoagulant therapies and antiplatelets has led to an increase in the incidence of patients without obvious precipitating events [3,4]. If the bleeding occurs above the arcuate line, the superior epigastric artery is usually the source, and in case of bleeding below the arcuate line, inferior epigastric artery results in bleeding.

Rectus sheath hematoma is a rare but important condition causing abdominal pain. There is a female predominance which may be explained by larger rectus muscle mass in man [3]. We report the case of a 72-year-old female with spontaneous rectus sheath hematoma mimicking acute abdomen.

### CASE REPORT

A 72-year-old female patient presented to the department with a history of sudden onset of pain abdomen for 2 days. The pain was more on the left lower part of the abdomen, insidious in onset, dull aching in nature, gradually progressive, aggravated by bending forward or even on slight movement of the abdomen, and no relieving factors. No significant family history was present. The patient was a known case of carcinoma cervix stage IIB which had been diagnosed 2 years ago. The patient had received

46.8 Gy in 26 fractions of external beam radiotherapy and 2 cycles of cisplatin. Post-chemoradiation, the patient had experienced several episodes of per rectal bleeding over the past 1 year and a diagnosis of radiation proctitis was made. The patient was treated with steroid enema.

At presentation, pallor was present on clinical examination and her bowel sounds were normal on auscultation. The patient had tachycardia (pulse rate - 116/min) and hypotension (blood pressure - 86/60 mmHg) but afebrile. Physical examination revealed a tenderness and guarding over the left iliac region with an abdominal mass measuring 15 cm × 5 cm, firm in consistency with associated muscular rigidity. Fothergill sign and Carnett's sign were positive.

Blood examination revealed an initial hemoglobin level of 7.8 g/dL and hematocrit of 23%. Total white blood cell count was  $10.97 \times 10^3/\text{dL}$ , platelet was  $327 \times 10^9/\text{L}$ , activated partial thromboplastin time was 26.6 s, prothrombin time was 13.4 s, and an international normalized ratio was 1.2. Other blood investigations were normal. Contrast-enhanced computed tomography (CECT) scan of the abdomen and pelvis was done which revealed a hyperdense lesion of size 5.2 cm × 3.5 cm × 13.7 cm posterior to the left rectus muscle in the lower abdominal wall. No active contrast extravasation was noted (Fig. 1). It was Grade 1 hematoma.

The patient was taken up for emergency laparotomy after resuscitation, and she underwent evacuation of the hematoma along with ligation of the inferior epigastric vessels (Figs. 2-5), with intraoperative one unit of blood transfusion. On a post-operative day 1, the patient was doing well with reduced pain and tenderness over the abdomen. However, on post-operative



Figure 1: Contrast-enhanced computed tomography image showing enhancing lesion in the left rectus sheath suggestive of hematoma

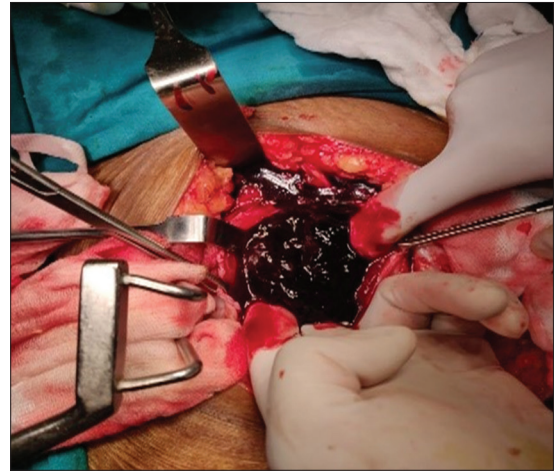


Figure 4: Large hematoma noted in between rectus muscle and transversalis fascia on the left side

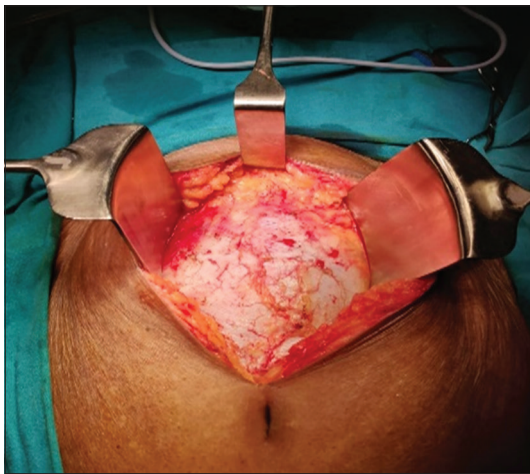


Figure 2: Anterior rectus sheath

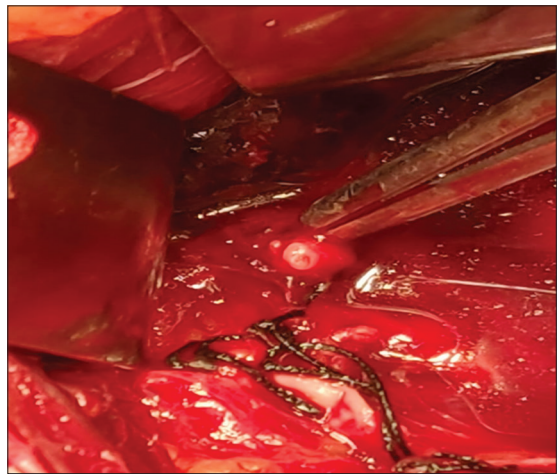


Figure 5: Ligated left inferior epigastric artery

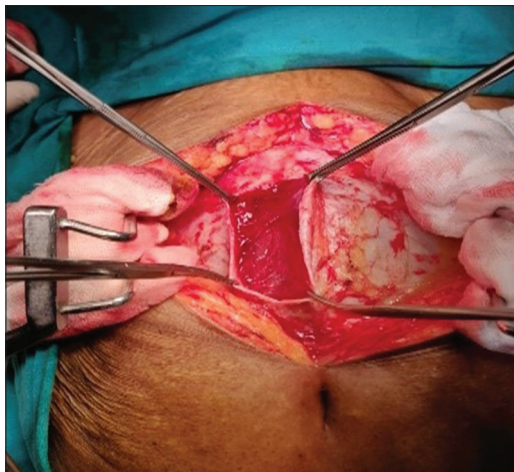


Figure 3: Anterior surface of the left rectus muscle

day 2, the patient developed deep vein thrombosis involving the left external iliac and common femoral and saphenofemoral veins, which was managed conservatively with antithrombotics. On follow-up after 1 month of surgery, the swelling over the thigh due to deep vein thrombosis had completely subsided and no abnormal abdominal findings were noted.

## DISCUSSION

Rectus abdominis includes a pair of vertically aligned muscles separated into superior and inferior portions by a constant line called arcuate line which lies 5 cm below the umbilicus. Above the arcuate line, the muscle is enclosed by strong aponeuroses of the external and internal oblique muscles and the transversalis muscle, which together comprises the rectus sheath. Below the arcuate line, these aponeuroses continue to provide anterior protection but posteriorly by weak transversalis fascia and peritoneum. Arterial supply to the muscle originates from the inferior epigastric artery and superior epigastric artery, themselves branches of external iliac artery and internal thoracic artery respectively. Both run between the posterior aspect of the muscle and the rectus sheath, where they form rich anastomoses near to the umbilicus.

Hematomas are more frequently seen in the lower segment of the rectus sheath, directly posterior to the muscle, whereas, above the arcuate line, it is usually self-limiting due to tamponade effect of the tightly enclosing aponeurosis [5].

Clinically, presentation may vary from pain abdomen, tender mass, anemia to signs of localized peritonitis. The most common presenting feature is a tender lower abdominal mass that does not

cross the midline. In general, it remains conspicuous on tensing the abdominal wall musculature by head or leg raising. This is referred to as Fothergill's sign. Similarly, tenderness remains the same or increases with head raising and is referred to as Carnett's sign [6,7]. These two clinical signs are important tests to differentiate this condition from other intra-abdominal pathologies such as sigmoid diverticulitis and carcinoma sigmoid colon. In our patient, both the signs were positive. Ultrasonography could accurately demonstrate a fusiform longitudinal mass confined to the abdominal wall. Alternatively, CT and magnetic resonance imaging also offer accurate anatomical delineation [8].

Rectus sheath hematoma has been graded from Grade 1 to Grade 3 according to the anatomical extent of hematoma and severity of symptoms [6]. Grade 1 includes intramuscular, unilateral hematoma that does not dissect along fascial planes and usually presents with mild-to-moderate abdominal pain without anemia. Grade 2 includes bilateral hematoma between the muscle and transversalis fascia, extension into the prevesical space, and presents with mild anemia. Grade 3 includes bilateral, large hematoma that dissects between the transversalis fascia and muscle into the peritoneum and prevesical space with a significant drop in hemoglobin with hemodynamic instability [6]. Our patient was of Grade 1 hematoma. Management is based on the grade of hematoma, where Grade 3 hematoma is managed by reversal of anticoagulants and blood transfusion or angiographic interventions.

Surgery is rarely needed for securing hemostasis and stabilizing hemodynamics, which is associated with significant morbidity due to the advanced age and multiple comorbidities in these patients. Hence, it is reserved for the most severe cases. Coil or gel foam embolization of the bleeding vessel has been successfully used in the patients with refractory bleeding despite the reversal of coagulopathy [9]. Complications described include abdominal compartment syndrome, hypovolemic shock, myocardial infarction, and death. Recurrence has been reported to be 1.6%, especially after recommencing anticoagulants [10-12,3].

Our case was an elderly female without any of the described precipitating factor. Decreasing hemoglobin with unstable hemodynamics was the indication of the early preference of surgical intervention. Kapan *et al.* reported three cases of rectus sheath hematoma which was managed conservatively as the patient's hemodynamics were stable [13]. Awe J.A.A reported a case of rectus sheath hematoma post-cesarean section which was managed surgically as the patient's hemodynamics were not stable [14]. Smithson *et al.* reported 24 cases of rectus sheath hematoma, 19 of which were managed conservatively and 5 cases were managed by embolization [15]. Hereby, we propose to consider this condition in the differential diagnosis of acute

abdomen, especially in elderly females, and the management options depend on the severity of hematoma.

## CONCLUSION

Spontaneous rectus sheath hematoma may be a rare cause of acute abdomen but needs to be considered in the differential diagnosis, especially in the situation wherein localized tender mass is found without obvious sign of diffuse peritonitis.

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