

## THE CLINICAL PICTURE

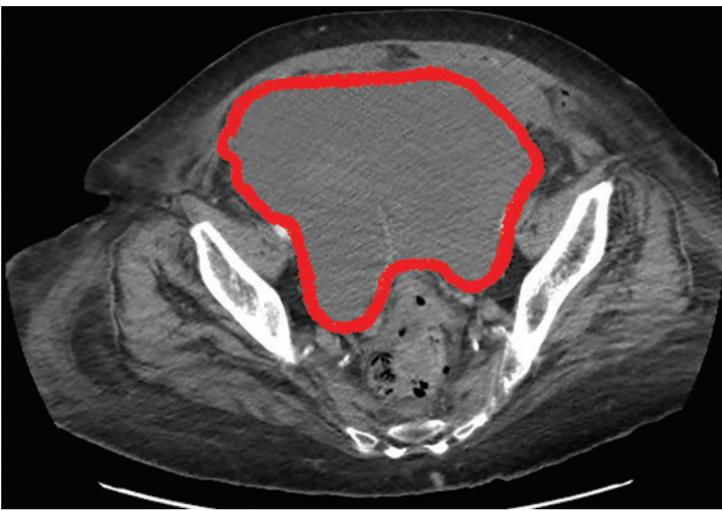
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# A complication of enoxaparin injection



**Figure 1.** Abdominal computed tomography revealed a hematoma 15 cm × 15 cm within the paracolic gutter and pelvis, causing bladder compression and left-sided hydronephrosis.

A 78-YEAR-OLD WOMAN presented to the emergency department with shortness of breath and palpitations and was found to have atrial fibrillation with rapid ventricular response. Medical therapy with drug therapy and cardioversion proved ineffective. She then underwent atrioventricular node ablation and placement of a pacemaker.

At the time of admission, anticoagulation was started with full-dose enoxaparin, injected subcutaneously on the left side of the abdominal wall, as her CHA<sub>2</sub>DS<sub>2</sub>-VASc score (<http://chadvasc.org>) was 5, due to age, female sex, and history of heart failure and hypertension.

Four days after admission, she reported lower abdominal pain, and her urine output was minimal. A bladder scan showed more than 500 mL

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of residual urine. She was hemodynamically stable, but physical examination revealed mild abdominal distention and tenderness in the suprapubic region. Laboratory testing showed a sharp rise in serum creatinine and a drop in hematocrit.

Computed tomography of the abdomen revealed a hematoma measuring 15 by 15 cm within the paracolic gutter and pelvis, compressing the bladder and causing left-sided hydronephrosis (Figure 1). Her laboratory abnormalities were therefore interpreted as postrenal acute kidney injury and anemia due to blood loss.

The patient was initially managed conservatively with serial physical examinations, monitoring of the hematocrit, serial imaging studies, and discontinuation of anticoagulation, but the pain and anuria persisted. Repeat computed tomography 15 days after admission showed that the hematoma had expanded, and she now had hydronephrosis on the right side as well, requiring urologic intervention with bilateral nephrostomy tube placement.

The size of the hematoma was evaluated with serial abdominal and pelvic examinations. After several days, her urine output had improved, the nephrostomy tubes were removed, and she was discharged.

## ■ RECTUS SHEATH HEMATOMA

Our patient had a giant pelvic hematoma, probably arising from the rectus sheath. This uncommon problem can arise from trauma, anticoagulation, or increased intra-abdominal pressure, but it can also occur spontaneously.<sup>1</sup>

In rectus sheath hematoma, a branch of the inferior epigastric artery is injured at its insertion into the rectus abdominis muscle. Symptoms arise if bleeding does not stop

spontaneously from a tamponade effect.<sup>2</sup>

We speculate that in our patient, deep injection of enoxaparin into the abdominal wall injured the inferior epigastric artery, which started the hematoma, and the bleeding was exacerbated by the anticoagulation effect of the enoxaparin.

Another form of pelvic hematoma is retroperitoneal. It is most commonly caused by trauma but can occur due to rupture of the aorta, compression from tumors, or, infrequently, anticoagulation therapy.<sup>3</sup>

### The role of anticoagulation

Spontaneous pelvic hematoma is usually missed as a cause of abdominal pain in patients on anticoagulation therapy and is mistaken for common acute conditions such as ulcer, diverticulitis, appendicitis, ovarian cyst torsion, and tumor.<sup>4</sup> It usually develops within 5 days of starting anticoagulation therapy. Symptoms vary depending on the location of the hematoma and are best diagnosed with abdominal computed tomography, with sensitivity as high as 100%.

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### MANAGEMENT

Conservative management, reserved for patients in stable condition, includes temporarily stopping and reevaluating the risks and benefits of anticoagulation and antiplatelet agents, giving blood transfusions, and controlling pain. If conservative measures fail, options are arterial embolization, stent grafting, and blood vessel ligation.<sup>5</sup> If these measures fail, patients should undergo surgical evacuation of the hematoma and ligation of bleeding vessels.<sup>6</sup>

### TAKE-HOME MESSAGE

Subcutaneous injections, especially of anticoagulants, into the abdominal wall can increase the risk of hematoma. Other risk factors are older age, female sex, and thin body habitus with less abdominal fat.<sup>7</sup> Healthcare professionals should avoid deep injections into the abdomen and should counsel patients and their caregivers about this, as well. The deltoid region could be a safer alternative. ■

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