

Retroperitoneal and Rectus Sheath Hematomas

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KEYWORDS

• Retroperitoneal • Rectus sheath • Hematomas • Retroperitoneum

KEY POINTS

- The retroperitoneum is rich in vascular structures and can harbor large hematomas, traumatic or spontaneous.
- The management of retroperitoneal hematomas depends on mechanism of injury and whether they are pulsatile/expanding.
- Rectus sheath hematomas are uncommon abdominal wall hematomas usually secondary to trauma to the epigastric arteries of the rectus muscle.
- Common risk factors include anticoagulation, strenuous exercise, coughing, coagulation disorders, and invasive procedures on/through the abdominal wall.
- The management is largely supportive, with reversal of anticoagulation and transfusions; angiobolization may be necessary.

RETROPERITONEAL HEMATOMAS

The retroperitoneum is an organ-rich region with several vital structures. It can be a site of major bleeding and harbor sizable hematomas caused by its highly vascular nature after trauma, surgical or endovascular interventions in the area, or spontaneously in patients on anticoagulation therapy or with vascular lesions.¹⁻⁴

The retroperitoneum is divided in 3 anatomically distinct zones (**Fig. 1**): *Zone I*, or central retroperitoneal (RP), is defined as the area medial to the renal hila and contains the abdominal aorta and inferior vena cava, the celiac axis, superior mesenteric artery, and proximal renal vasculature. It also contains the pancreas and RP portion of the duodenum. *Zone II*, or lateral RP, includes the adrenals, the kidneys, and proximal genitourinary tract. *Zone III*, or pelvic RP, contains the rectum, the iliac vessels, and their branches/tributaries.⁵

Although in patients with multiple injuries a significant RP hemorrhage can manifest with hemodynamic instability and less commonly with ecchymoses in the affected areas, its clinical presentation in postprocedural or anticoagulated patients can be protean and include signs and symptoms such as malaise, unexplained tachycardia,

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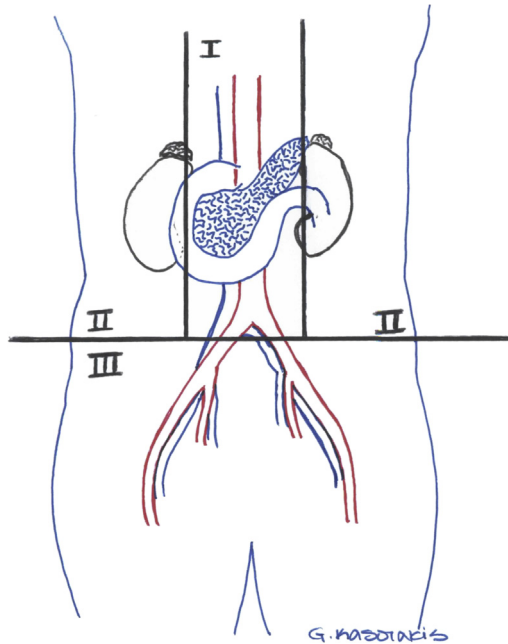


Fig. 1. The zones of the retroperitoneum.

a slowly dwindling hematocrit, hematuria, flank or back pain, ecchymoses, or even hypotension and abdominal compartment syndrome.

Although the diagnosis can easily be established with computed tomography, ideally with intravenous contrast that may detect active extravasation, the acute care surgeon should consider RP bleeding in hypotensive injured patients with normal chest and pelvic radiographs and a negative FAST (focused abdominal sonography for trauma).²

The management of RP hematomas, in addition to resuscitation and transfusions as needed, almost always revolves around surgical exploration in cases of spontaneous or postprocedural hemorrhage, with reversal of anticoagulation and angioembolization being useful adjuncts. Traumatic RP hematomas identified at laparotomy are explored depending on the mechanism of injury (blunt vs penetrating) and whether they are pulsatile or expanding.^{6,7} All zone I RP hematomas mandate exploration, ideally after proximal (and when applicable, distal) control is established, to ensure no major vascular injuries are missed. Similarly, all RP hematomas after penetrating injuries should be explored, especially when major vessels are within the bullet/sharp object trajectory. Zone II and III RP bleeds after blunt injury should be explored only if pulsatile or expanding.⁸ Should patients with hypotensive blunt trauma with severe pelvic fractures and a zone III hematoma require laparotomy, preperitoneal packing (usually with 3 laparotomy pads on either side of the bladder) can be undertaken through a separate low transverse incision, until angiography and embolization can be performed.^{5,9,10}

Table 1 summarizes the management principles of RP hematomas.

RECTUS SHEATH HEMATOMAS

Rectus sheath hematoma (RSH) is a relatively uncommon condition, which arises from bleeding into the sheath of the rectus muscle, typically from trauma to the epigastric

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