

Dented bladder sign: An early marker of retroperitoneal hemorrhage

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A 69-year-old diabetic and overweight woman underwent elective coronary angiography (CAG) for the treatment of severe right coronary artery stenosis. CAG was performed through the right femoral artery (RFA), after multiple puncture attempts, since the radial/ulnar arteries were not palpable. During the procedure, she reported back pain and developed severe hypotension. Fluoroscopy revealed indentation of the margin of the bladder (Figure 1, white arrowheads, Supplementary material, Video S1), known as the “dented bladder sign”, and contrast extravasation lateral to the RFA (Figure 1, black arrow, Supplementary material, Video S1) suggesting the diagnosis of retroperitoneal hemorrhage (RPH). An urgent bedside ultra-

sound confirmed RPH. The “dented bladder sign” is a finding noted during fluoroscopy, X-ray, or CT-scan in the contrast-filled bladder suggestive of external compression and is an important early marker of RPH [1]. Our patient was stabilized after administration of intravenous fluids, blood transfusion, and vasopressors and underwent urgent vascular surgery. The postoperative course was uneventful.

Patients who undergo angiography receive sufficient contrast volume that a potentially useful cystogram can be visualized by the end of the procedure. External compression of the margin of the bladder after cardiac or peripheral catheterization can occur due to blood accumulation through a perforated

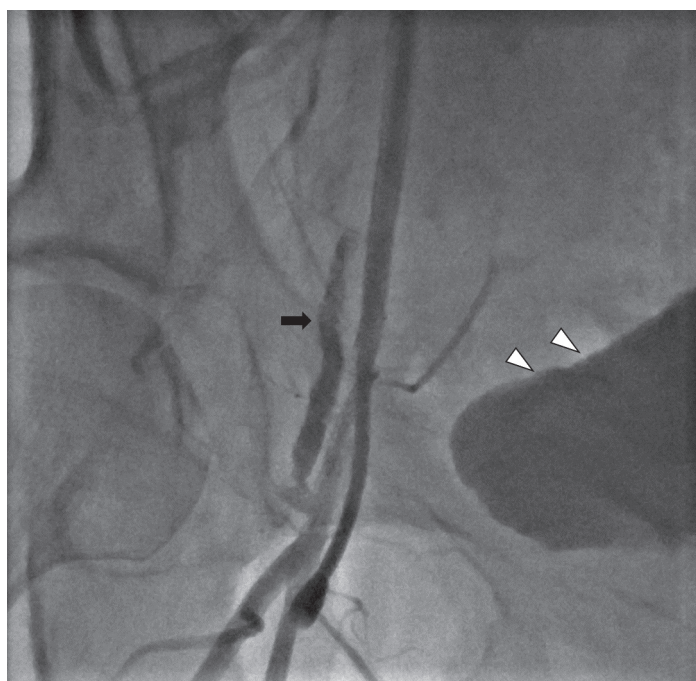


Figure 1. Fluoroscopy showing indentation of the margin of the contrast-filled bladder (white arrowheads) suggestive of external compression known as the “dented bladder sign” and contrast extravasation lateral to the right femoral artery (black arrow), prompting the diagnosis of retroperitoneal hemorrhage

femoral or iliac artery after a high puncture [1]. Female sex, body surface area extremes, high puncture over the inferior epigastric artery, glycoprotein IIb/IIIa inhibitor use, sheath size >8 F, and the use of vascular closure devices have been described as serious risk factors for RPH while ultrasound-guided cannulation of the femoral artery is associated with lower rates of vascular access complications [1–3]. Treatment includes fluid resuscitation, reversal of anticoagulation, transfusion of blood products, percutaneous intervention with balloon inflation or covered stent implantation, and surgical intervention [1].

The adoption of the radial artery as default vascular access for interventional cardiologists can decrease competency in the femoral approach. Nonetheless, the femoral strategy is still used during CAG, complex coronary, or valve interventions underpinning the importance of skill maintenance and early identification of possible complications. The retroperitoneum can harbor a substantial volume of blood before specific symptoms and signs occur, delaying RPH diagnosis with detrimental consequences. Bleeding — especially RPH — following percutaneous coronary interventions carries a dismal prognosis [1]. A recent study highlighted that vascular access complications were among the 3 most common etiologies of bleeding events in Polish cardiac wards [4]. Therefore, sheath angiography and fluoroscopy of the bladder are tools of utmost importance for prompt diagnosis of RPH.

While RPH is an uncommon complication of catheterization, it is associated with high morbidity and mortality, requiring vigilance and timely recognition. In the era of radial access for the new generation of interventional cardiologists, the “dented bladder sign” is an easily identifiable

and highly specific marker of RPH and can be depicted on an incidental cystogram during catheterization.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska

Article information

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