

## Intraprostatic hematoma with active bleeding post-prostate biopsy

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### Abstract

To the best of our knowledge, we report the first known case of a large intraprostatic hematoma with active bleeding following transrectal ultrasound-guided prostate biopsy.

### Clinical presentation

A 63-year-old male presented for transrectal ultrasound-guided (TRUS) prostate biopsy for a serum prostate-specific antigen (PSA) level of 5.0 ng/mL. His surgical history was unremarkable, except for prior transurethral resection of the prostate (TURP) several years ago for benign prostatic hyperplasia (BPH). His medical history included gastroesophageal reflux disease and seizure disorders, for which he was on omeprazole and lamotrigine, respectively.

Prior to the procedure, his history, previous imaging, and laboratory results were carefully reviewed. Laboratory values on the morning of the biopsy, including platelet count, international normalized ratio, and partial thromboplastin time were all normal. Informed written consent was obtained after consultation with the patient, and the risks and benefits of the prostatic biopsy were discussed in detail. The patient received a standard dose of peri-procedural antibiotic prophylaxis with ciprofloxacin.

The prostatic ultrasound demonstrated a TURP defect, with no other sonographic abnormality. The prostate measured  $2.6 \times 4.7 \times 2.0$  cm, with a volume of 18.2 mL and PSA density of 0.27. A spring-loaded 16-gauge core needle biopsy gun was used for the prostate biopsy via a needle guide. A systematic 12-core biopsy was performed. No immediate complications were encountered.

Six hours after the biopsy, the patient presented to the local emergency department with severe rectal pain and

hypotension. An intravenous contrast enhanced computed tomography of the abdomen and pelvis demonstrated a large hematoma within the prostatic parenchyma with a focus of active contrast extravasation, indicating active ongoing intraprostatic bleeding (Fig. 1, Fig. 2). The prostate was grossly enlarged, with the hematoma/prostate complex measuring  $7.9 \times 7.3 \times 12.0$  cm.

The patient was brought to the interventional suite for emergent angiography and embolization. Flood pelvic aortogram demonstrated a small focus of active contrast pooling within the right prostatic bed, which was confirmed on selective right internal iliac artery angiogram (Fig. 3). A microcatheter was then advanced progressively into a anterior branch of the right internal iliac artery with a series of controlled angiograms. A series of platinum fibered microcoils were deployed across the origin of the bleeding vessel, as well as the adjacent vessel to prevent collateralization (Fig. 4). Post-embolization right internal iliac angiogram demonstrated successful occlusion of the vessel with no further bleeding.

We confirmed the diagnosis of large intraprostatic hematoma with active bleeding post-TRUS-guided biopsy of the prostate.

### Discussion

To the best of our knowledge, we report the first known large intraprostatic hematoma with active bleeding, following TRUS-guided prostate biopsy.

Screening for prostate cancer has become an important issue in recent years. TRUS-guided biopsy of the prostate is currently the gold standard in diagnosing prostate cancer.<sup>1,2</sup>

A recent single centre experience from 1000 consecutive cases of prostate biopsy observed a 2.5% rate of major complications requiring hospital admission or an emergency room visit.<sup>3</sup> Indications included urosepsis (1.2%), acute urinary retention requiring urethral catheterization (0.8%) and gross hematuria requiring bladder irrigation for <24 hours



**Fig. 1.** Contrast enhanced computed tomography of the abdomen and pelvis demonstrated a large intraprostatic hematoma and a grossly enlarged hematoma/prostate complex. Focus of contrast extravasation within the prostate anterolaterally, indicating active bleeding.

(0.4%). Another series prospectively evaluated the safety, morbidity, and characteristics of complications for TRUS-guided needle biopsy of the prostate in 98 patients solely by urologists at a single unit.<sup>4</sup> Of these patients, 25% patients experienced a rectal bleed post-biopsy.

Bleeding post-prostate biopsy occurs in several forms: hematuria (23%-84%), rectal bleeding (17%-45%), and hematospermia (12%-93%), according a white paper on published by the American Urological Association.<sup>5</sup> The incidence of significant bleeding, however, is less well-known. This is partially due to the lack of clear definition of "significant bleeding." The white paper states that the risk of significant bleeding post-prostate biopsy ranges from 1% to 4%, secondary to injury to the vessels supplying the rectal and urinary structures.

Although intraprostatic bleeding is frequently encountered in patients undergoing TRUS-guided prostate biopsy, it is usually mild, largely asymptomatic, and stops spontaneously. This is probably due to the tamponade effect by the adjacent prostate tissue and rigid prostatic capsule. Most symptomatic rectal bleeding is stopped by digital or balloon rectal compression. Supportive treatment also includes post-biopsy bed rest, volume support, and transfusion, if needed.<sup>5</sup> Angiographic embolization is rarely indicated in such cases.

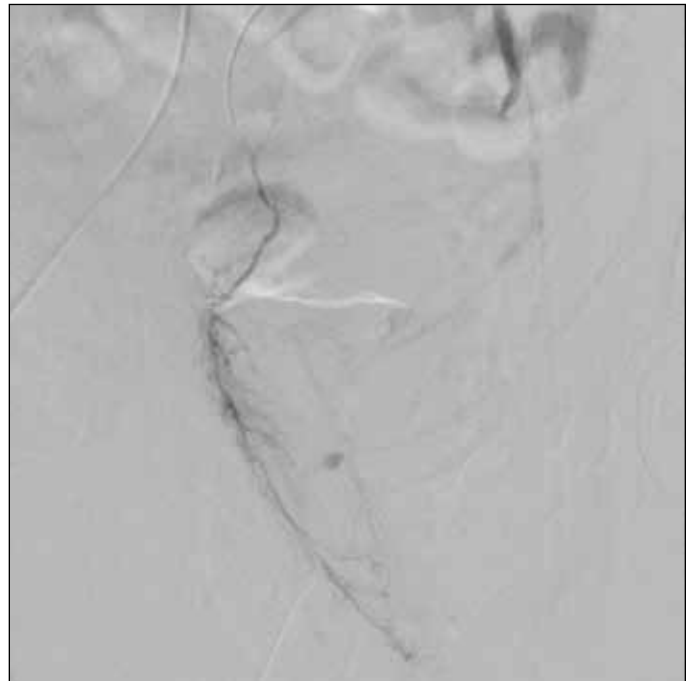
Our case is unusual in that to our knowledge this is the first case of large intraprostatic hematoma. We had not seen this complication before in our experience with more than 12 000 TRUS-guided prostate biopsies at our centre since 2000.

In the recent years, our understating of prostatic vascular anatomy has been rapidly growing due to the advancement of the alternative experimental treatment, prostatic

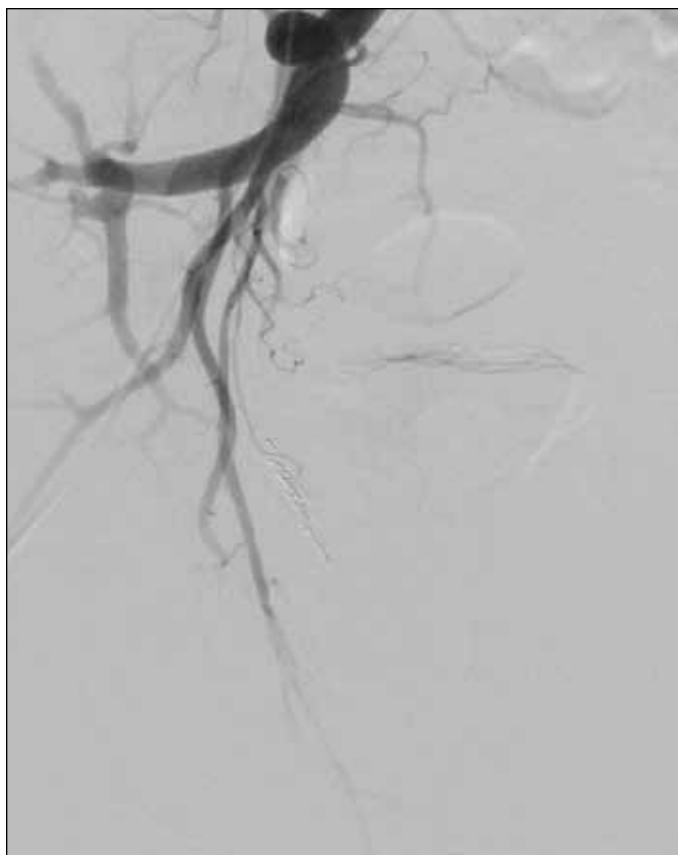


**Fig. 2.** Contrast enhanced computed tomography of the abdomen and pelvis demonstrated a large intraprostatic hematoma and a grossly enlarged hematoma/prostate complex. Focus of contrast extravasation within the prostate anterolaterally, indicating active bleeding.

arterial embolization, which has shown promising preliminary results in treating medically refractory benign prostate hyperplasia (BPH).<sup>6,7</sup> The prostate has a dual vascular supply: a cranial or vesico-prostatic artery (also called the anterolateral prostatic pedicle), and a caudal prostatic artery (also called the posterolateral prostatic pedicle).<sup>8</sup> The anterolateral



**Fig. 3.** Flood pelvic aortogram demonstrated a small focus of active contrast pooling within the right prostatic bed, which was confirmed on selective right internal iliac artery angiogram.



**Fig. 4.** Post-embolization right internal iliac angiogram demonstrated successful occlusion of the vessel with microcoils with no further bleeding.

prostatic pedicle frequently arises from the superior vesical artery, and supplies most of the central gland. Therefore, it is often the preferred artery to embolize in patients with BPH. The posterolateral pedicle is thought to arise from rectal or anal arteries, and supplies the peripheral and caudal aspects of the gland. In our patient, selective endovascular embolization with microcoils was successfully carried out in an anterior branch of the right internal iliac artery. This branch likely represented the anterolateral prostatic pedicle arising from the vesical artery.

## Conclusion

We described a case of TRUS-guided prostate biopsy complicated by large intraprostatic hematoma with active bleeding post-biopsy, which was treated by embolization. Large intraprostatic hematoma with active extravasation is extremely rare after TRUS-guided prostate biopsy. We believe this is the first case reported in the literature. Urgent angiographic intervention with embolization of the bleeding vessel (likely the anterolateral prostatic pedicle) with microcoils was curative in our case.

**Competing interests:** Dr. Guo, Dr. So, Dr. Sadler and Dr. Gray all declare no competing financial or personal interests.

This paper has been peer-reviewed.

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