



### *Case Report*

## **A RARE CASE OF PERIRENAL HEMATOMA AFTER URETERORENOSCOPY**

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### **ABSTRACT**

**Introduction:** Ureteroscopy is a standard procedure for the treatment of ureteral stones but it carries the risk of many complications – urinary tract infections being the most common. We present a rare case of a perirenal hematoma after this procedure.

**Case Presentation:** A male patient with bilateral ureteral stones was initially treated with stents. Later a laser disintegration of the stone in the right ureter was tried – unsuccessfully. After the procedure, a perirenal hematoma was found.

**Discussion:** Based on our previous experience, the hematoma was completely unexpected. The ultrasound provided the initial diagnosis but it underestimated its real size -the accurate diagnosis was made with contrast-CT. The initial conservative treatment failed because of the occurrence of fever.

**Conclusion:** Ureterorenoscopy-related hematoma is a rare, but serious complication. Its occurrence can be prevented by reducing the intrarenal pressure during the procedure and also by shortening the duration of the manipulation.

**Key words:** complications after endourology, ureteral stones

### **INTRODUCTION**

Ureteroscopy (URS) is a standard procedure for the treatment of ureteral stones (1) but it carries the risk of many complications (2) – urinary tract infections being the most common. In our institution URS is introduced in 1995 and this is the first documented case of a perirenal hematoma (PRH) after this procedure.

### **CASE PRESENTATION**

An otherwise-healthy 43-year-old male patient was admitted in our clinic on 11 Dec. 2019 with emerging acute renal failure due to bilateral ureteral stones. On the left side the renal colic was from 1 month, on the right side-from the morning on the day of admittance. There were no signs of

infection. The laboratory was as follows: hemoglobin 150 g/l, red blood cells 4.77, white blood cells 14.1, later 10.1, glucose 4.19 mmol/l, creatinine 278  $\mu$ mol/l, later 156, finally 98, urea 12.1, later 8.6 mmol/l, finally 5.2. Sodium, potassium and chloride were normal. Urine analysis revealed: protein positive, 4-5 leukocytes and 25-30 erythrocytes on high-power field spun urine. Urgently stents were inserted in the ureters bilaterally.

On 2 Feb. 2020 the patient was readmitted for URS on the right side where the CT-scan showed a stone 12 mm. on the level of L4 (on the left side the stone was 6 mm. in the distal third of the ureter). The URS was very difficult and prolonged because the stone was impacted in the ureteral mucosa. Continuous irrigation with high pressure was needed for better visibility. In the end we were not able to disintegrate the stone with the laser and the procedure was interrupted, a new stent was inserted. After the procedure the

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ultrasound revealed a PRH, and a contrast-enhanced CT-scan was done to prove it - there was a small pleural effusion on the right side with thickness of up to 9 mm. Normal liver, gall bladder, spleen, pancreas and suprarenal glands were found. The right kidney was with normal position and size, with subcapsular hematoma

dorsolaterally with thickness 34 mm. (**Figure 1**), also small extracapsular hematoma posteriorly. Normal left kidney and stents in both ureters – in the right ureter there was also a stone next to the stent (**Figure 2**). A small amount of free fluid in the small pelvis. Actually the real size of the PRH was bigger than expected from the ultrasound.



**Figure 1.** Contrast-enhanced CT-scan of the perirenal hematoma after the ureterorenoscopy



**Figure 2.** Stents in the ureters – in the right ureter there is also a stone next to the stent

Initially a conservative treatment was tried but because of persistent fever (38.5°C) an open operation was done- subcostal lumbotomy was performed and with ureterolithotomy a 1cm stone was removed. The existing stent was kept in the ureter. After that the kidney and the PRH were dissected, the renal capsule incised and the hematoma evacuated. No visible bleeding from the renal parenchyma was observed so the renal capsule was closed. The postoperative period was uneventful. Several times urine/blood cultures were taken-all were negative. The other laboratory results were as follows: hemoglobin initially was 162 g/l, after the URS it dropped to 121 and stabilized but during the fever dropped again to 97, after the open operation it remained stable around 106. The highest level of the white blood cells was 16.9, upon discharge from the hospital they were 9.4. Normal creatinine, urea, sodium, potassium and chloride. The highest level of the C-reactive protein was 262.9 mg/L, upon discharge from the hospital it was 14.74.

Next month the patient said that he had eliminated some stone fragments spontaneously. On 13 April 2020 cystoscopy was performed and the stents were removed. URS was done on the left side and no residual stones were found there. Postoperatively bilateral hydronephrosis (grade 1-2) was found and so a urethral catheter was inserted for a week. The hydronephroses disappeared and the catheter was removed.

## DISCUSSION

The overall complication rate after URS is 9-25% (2). Most complications are minor with fever being the most common. More severe post-operative problems are urosepsis-of up to 5% (3, 4), ureteral avulsion and strictures-affecting < 1% of patients. Because many of the complications are related to the presence of bacteria in the urine they can be minimized by using prophylactic antibiotics and identification and treatment of pre-operative positive urine cultures.

So, in order to avoid a certain complication the surgeon must have an idea that this complication is possible to occur. In our case, based on our previous experience, PRH was completely unexpected. The literature review found one article (5) stating an incidence of post-URS PRH 0.45% (40 out of 8929 patients from 1980 to September 2016). The predisposing factors were

moderate to severe hydronephrosis, thin renal cortex, prolonged operative duration, uncontrolled arterial hypertension, and preoperative urinary tract infection. In our case the only etiological factors were the prolonged procedure and the continuous irrigation with high pressure. High intrarenal pressure predisposes to all URS complications (mostly infectious), and measures should be used to reduce it. Unfortunately currently there are no accurate ways to measure intra-operative intrarenal pressure (6).

The ultrasound provided the initial diagnosis but it underestimated the real size of the hematoma-the accurate diagnosis was made with contrast-enhanced CT-scan. According to the classification of the American association for the surgery of trauma the injury was Grade 1 (7). Initially conservative treatment was tried with antibiotics. The occurrence of fever raised the suspicion of possible infection, which can lead to the formation of a perinephric abscess. Also the problem with the ureteral stone remained unsolved (although there was a stent in the ureter). Despite the fact that a perinephric abscess can be managed by percutaneous drainage (8) we decided to proceed with an open operation in order to solve simultaneously all problems. The following postoperative period was uneventful; the further treatment of the patient was facilitated by the spontaneous passage of the stone in the left ureter.

## CONCLUSIONS

URS-related PRH is a rare, but serious complication. The occurrence of PRH can be prevented by reducing the intrarenal pressure during the procedure and also by shortening the duration of the manipulation.

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