

Case – Trapped ureteroscope during a surgery: Safe overnight dilatation

Jonathan Fadel, Jonathan Cloutier, Michel Bureau

Division of Urology, Department of Surgery, CHU de Québec – Université Laval, Québec, QC, Canada

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Corresponding author: Dr. Jonathan Fadel, Division of Urology, Department of Surgery, CHU de Québec – Université Laval, Québec, QC, Canada; jonathan.fadel.1@ulaval.ca

INTRODUCTION

Ureteroscopy is a very common procedure in urology, with broadened indications associated with minimally invasive therapies. It is one of the techniques most widely used for upper urinary tract pathology. Many complications have been reported but none mention a trapped ureteroscope in the ureter. We present the case of a patient who underwent a flexible ureteroscopy and the management following entrapment of the surgical instrument in the ureter with passive dilation overnight.

CASE REPORT

A 24-year-old healthy male with no previous urological history, presented with abdominal pain. CT scan showed an 8.4 mm stone lodged in the right proximal ureter and a 13 mm stone in the left proximal ureter. There were also a 7 and a 10 mm stones in the right and left kidneys respectively. The patient was stable, had no signs of infection and his pain was relieved with narcotics. His serum creatinine level and complete blood count were normal. Due to bilateral obstruction, the patient was consented and brought for ureteroscopy.

During the procedure, we could not progress by the stone in the right ureter after cannulating with a guidewire. A retrograde pyelography confirmed an intact anatomy. We passed a hydrophilic guidewire and proceeded to coaxial dilation of the ureterovesical junction up to 10 Fr. After attempting with a rigid ureteroscope, which did not pass the junction, we smoothly passed an 8.5 Fr high definition flexible ureteroscope (Storz Flex-Xc model). Holmium laser was then used to fragment the stone into submillimeter particles. We withdrew the flexible ureteroscope under direct vision.

While withdrawing the ureteroscope, we noted some resistance in the middle ureter. After applying a gentle traction, we brought the scope at the distal ureteral level where it was trapped and would not move further. We believe there were stone fragments stuck between the scope and the ureter.

Firstly, we used a 6 Fr rigid ureteroscope and tried to pass by the narrowing point, which was futile. Then, we tried to progress with a hydrophilic guidewire and a ureteral catheter, both of which were ineffective. Following these attempts, we injected a mixed solution of normal saline and Xylocaine gel around the flexible ureteroscope which helped achieve a small gain by moving the device at approximately 3 cm from the ureterovesical junction. We tried multiple back and forth motions, but the scope did not move. We applied a light pressure at the ureterovesical junction with a 20 Fr rigid cystoscope and pulled the ureteroscope in parallel, but outcome remained similar. Following more than an hour of procedure, we sought advice from a colleague and opted to leave the flexible ureteroscope in place and aim for a passive dilation. We left a stent in the contralateral ureter and then placed the stuck ureteroscope in a sealed sterile bag to limit contamination.

The patient was hospitalized and agreed to a secondary surgery the next day. We presented the possibility of ureteral avulsion, abdominal laparotomy, and associated complications. He empirically received oral antibiotic for a 7-day total period following initial surgery.

In the second surgery, after getting the patient prepped and draped, we gently pulled the ureteroscope and removed it without difficulty. The guidewire initially passed through the scope was still in place. We then proceeded to a rigid ureteroscopy and visualized a small breach in the mucosa, but no deep tear nor avulsion of the ureter. A right ureteral stent was installed. The stents remained in place for 8 weeks to optimize healing after which we performed a ureteroscopy and found local oedema without stenosis nor further complications. Left side ureteroscopy was performed with new bilateral stents placed and removed after 7 days by pulling on the attached string.

Patient required 3 more interventions for bilateral kidney stones, on a follow-up of over 10 months. A metabolic workup was prescribed but has not yet been done by the patient. He is seen regularly on follow-up and is well without residual urinary problems.

DISCUSSION

In 2012, Kidney stone prevalence was as high as 10,6% in men and 7,1% in women,¹ with an estimated cost of 5 billion USD.^{2,3} Kidney stone risk factors include an ageing population,⁴ obesity, food intake,⁵ diminished fluid, and calcium intake.⁶

Despite an increasing number of ureteroscopy cases performed worldwide, associated complication rates remain low.⁷ These can be classified as minor or major⁸ with the latter condition being ureteral perforations, and avulsions. We present what we believe is an exceptional and rarely documented situation in endourology. Hubosky et al reported few cases of

locked deflection with most of successful removal following retrograde maneuvers.⁹ The FDA's MAUDE database disclosed a stuck ureteroscope with retraction techniques and a rigid cystoscope utilized to help retrieval.¹⁰

Medical expulsive therapy (MET) should be considered for ureterolithiasis with positive outcomes for ureteroscopy following preoperative alpha-blockers showing significant reduction for the need of ureteral orifice dilation¹¹ and higher rate of access to stones.¹² None have evaluated medication use in material entrapment as it is a rare situation. In our case, patient did not receive alpha-blockers prior to surgery.

If a urologist suspects a difficult ureteral ascension, one could consider starting with a semi-rigid ureteroscopy prior to flexible ureteroscopy to evaluate the ureter under direct vision. Ureteroscope entrapment is a distinctive and feared complication. After trying multiple maneuvers, one could consider leaving the ureteroscope overnight and aim for safe passive dilatation.

DRAFT

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