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## Intrarenal foreign body after PCNL procedure: A rare complication

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### ABSTRACT

The use of LASER for lithotripsy has not only improved PCNL results, but also reported complications related to laser's use. We report a case of severed guide wire after PCNL.

### Introduction

Endo-urology, as a treatment of urolithiasis, has known a real revolution with the advent of modern and minimally invasive techniques since the 1980s. Percutaneous nephrolithotomy (PCNL) can treat large, simple pelvic calculi, calyceal stones as well as complex and/or stag-horn calculi with identical results and lower complication rates than open surgery. The use of LASER for lithotripsy has not only improved PCNL results, but also reported complications related to laser's use.

### Case presentation

A 40-year-old patient, operated 10 years ago by a lombotomy for right kidney stones, presented with right flank pain. Hemoglobin level was correct and creatinine level was 85  $\mu\text{mol/ml}$ . CT-scan showed a 36 mm pelvic calculus, a 15mm inferior calyceal calculus and a 7mm mid calyceal calculus (Fig. 1). She had a right PCNL under general anesthesia and performed in supine position. Percutaneous access to renal cavities was ultra-sound (US) and fluoroscopy guided at same. A hydrophilic coated guide wire was used in this step of the surgery. Fragmentation of the calculi was realized using a 200-microm Holmium laser. Parameters were 10Hz for frequency, 1.5J for energy and long pulse duration. By the end of the operation, drainage was provided by a double J stent. Post-operative day 1 standard imaging showed the presence of an opacity projecting the right renal area. CT scan showed a hyper dense tabulated material having a proximal extremity in the sub-hepatic space and an intra renal distal extremity and residual calculi (Fig. 2). The patient underwent a second surgery on Day 2. Under general anesthesia, in the

supine position, a rigid ureteroscopy was attempted after mounting hydrophilic guide wire under fluoroscopic control. Progression through the ureter to its proximal part was easy where the tip of the guide wire was visualized. Then, the wire was removed (Fig. 3). The postoperative follow-up was straightforward and the patient was discharged the next day. During the follow-up, she had an extracorporeal shockwave (ECS) on the residual stones followed by ablation of the double J stent.

### Discussion

Renal lithiasis remains a subject of important scientific interest because of the multiplicity of factors involved in its genesis and its complications. Despite its advantages over traditional surgery and ECS, PCNL has its own limitations is not without limitations, and its complications may occur in 30% of cases. Although it has been widely adopted for some time, PCNL still lacks a standardized procedure. The use of LASER during PCNL has been shown to be effective and safe in the management of kidney stones. It has been shown that its use improves stone free levels.<sup>1</sup> Holmium YAG laser lithotripsy is an effective and safe technology for the treatment of urinary stones in almost all (of) patient groups, from young children to adults and elderly persons, from pregnant women to patients with spinal cord injury. Its safety profile has been widely demonstrated and is still the subject of countless recent studies.<sup>2</sup> However, laser lithotripsy has lately been the subject of some direct and indirect complications and safety concerns. The most common complication in laser lithotripsy is fever.<sup>3</sup> On the other hand, it should be kept in mind that there are at least three reported mortalities resulting from ureter perforation and retroperitoneal bleeding using

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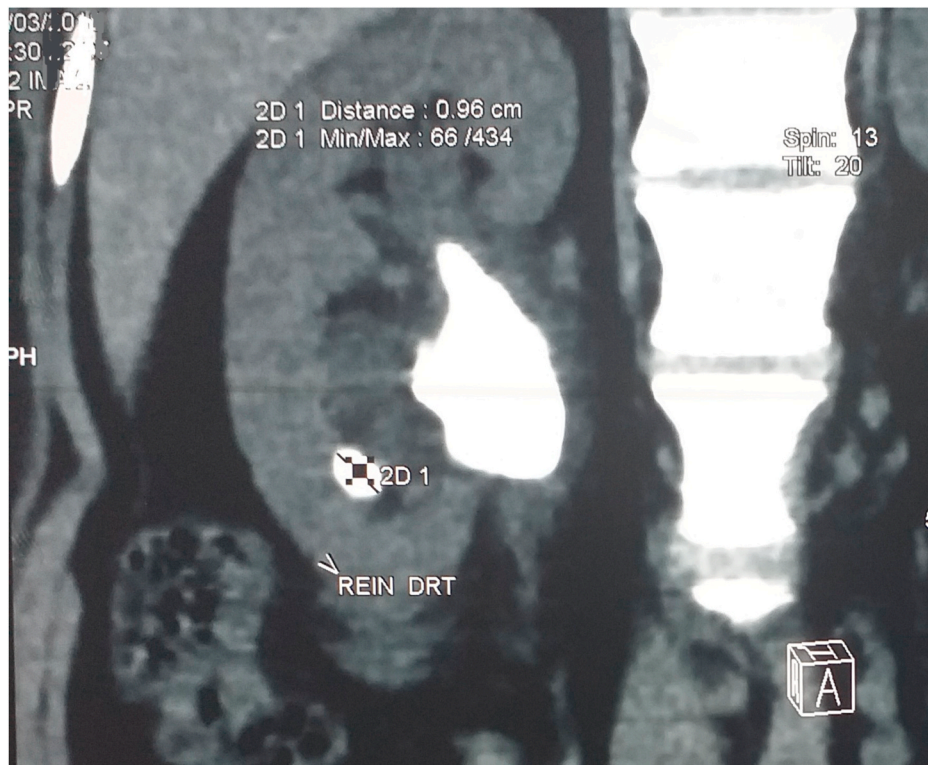


Fig. 1. Pre-operative CT scan.

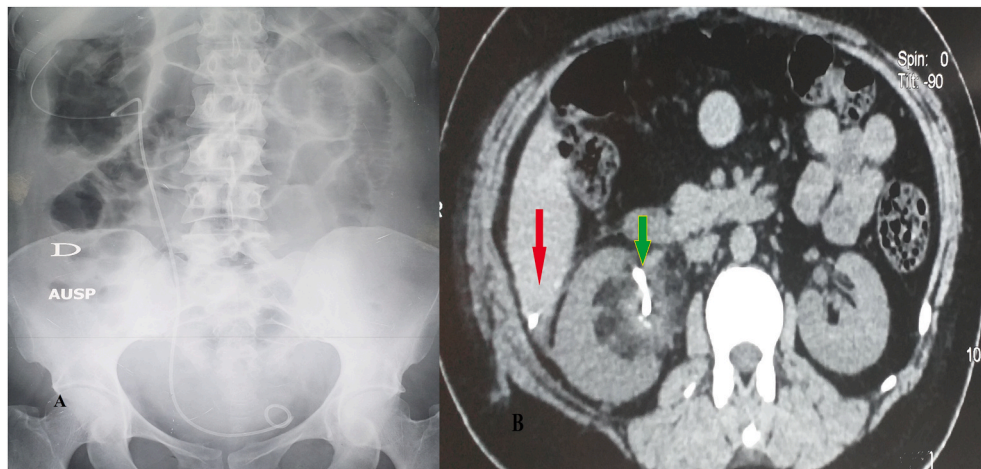


Fig. 2. A: post operative standard imaging  
B: post operative CT-scan.

laser. In all cases, the risk of sub-capsular hematoma can be reduced by avoiding prolonged endoscopy and performing low pressure uretero-renaloscopy. No case of section of guide wires by LASER has been reported in the literature. The use of LASER fiber must submit to a certain number of rules to avoid all types of complications. While performing LASER lithotripsy, always keep the tip of the fiber in the endoscopic field of view to control it and avoid accidental damage. Furthermore, keeping the used tools in the endoscopic field of view is necessary. At the end of each intervention, the endoscopic control is carried out systematically to check the emptiness of renal cavities. Julia et al. conducted a review of iatrogenic ureteric lesions complicating endo-urological procedures and concluded (on)! the importance of complete verification of the urinary tract at the end of the operation.<sup>4</sup> Missing out on an intra-renal foreign body, as in our case, could be due

to a lack of endoscopic verification. In fact, Fluoroscopic control is essential during PCNL and this is valid regardless of the nature of the calculi, even for radio transparent stones. Fluoroscopy takes place during the puncture step, which is a crucial step in the procedure on which its success will depend.

A meta-analysis by Yang et al. compared the results of echo-guided PCNL versus that performed by fluoroscopy.<sup>5</sup> She concluded that the two techniques are comparable in terms of effectiveness and that ultrasound control exposes to a lower number of complications. In addition, this meta-analysis concluded that echo-guided PCNL has the same degree of efficacy in both prone and supine position. In our case, the radio-transparent nature of the stones could have prompted the surgeon not to use fluoroscopy at the end of the operation. The idea of reducing the dose of radiations may also have prompted the surgeon not to use



Fig. 3. Guide wire extracted.

fluoroscopy. This step could be objectified the already severed guide

wire. In addition, Ultrasound could have been used to verify the emptiness of the renal cavities.

### Conclusion

NLPC has its own complications. Urologists have to know how to anticipate these complications and study them well in order to manage them better.

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