

## Conclusion

In conclusion, although ureteral stent placement is one of the most common urological procedures, it still carries significant morbidity for patients. Magnetic Black-Star® double J stent could represent a valid option to decrease stent related symptoms and to reduce pain during outpatient stent extraction.

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# Reduction in stent related symptoms when using the Magnetic Black-Star®

## Case Report, 2022

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## Introduction

Ureteral stent placement is nowadays a standard procedure after urologic endoscopic surgery. Although the main randomized trials proved that stent placement is often unnecessary after ureterorenoscopy [1], most of the urologists preferred to protect ureters from possible complications [2]. Nevertheless, ureteral stents are often responsible for urinary symptoms called stent related symptoms (SRS) such as urgency, frequency and worsening of quality of life for patients who underwent endoscopic surgery. Younger patients and women are usually more affected than men or older patients [3]. The Ureteric Stent Symptom Questionnaire (USSQ) is a reliable questionnaire to evaluate patient urinary symptoms related to ureteral stents [4]. Although in the last decades ureteral stents have undergone several technological advancements [5], SRS still represent one of the major issues of endoscopic surgery, causing a negative impact of everyday life in up to 92% of patients [6]. Magnetic stents, removed with a disposable magnetic retrieval, allow a less invasive and a more tolerable outpatient procedure.

This case report describes a case of a patient who tolerated well a Magnetic Black-Star® stent (Urotech GmbH, Achenmühle, Germany) after ureteral stone lithotripsy, showing no severe urinary symptoms or discomfort during indwelling time and stent extraction with the associated retrieval device.



## Case report

A 50-year-old patient with recurrent left flank pain was admitted to our hospital. He had a history of a right ureteral stone treated with endoscopic surgical procedure and a double J stent placement 4 years ago. The double J stent was responsible for urinary symptoms including frequency and urgency. Moreover the patient had experienced pain during the outpatient procedure of cystoscopic stent extraction. He presents no history of other diseases.

We performed a computerized tomography urogram that showed a 6 x 3 mm stone in the distal part of the left ureter causing mild hydronephrosis in the ipsilateral kidney and a millimetric stone in the right ureter. The excretory phase revealed a partial obstacle to contrast passage due to the presence of the left ureteral stone, with no obstruction in the right kidney. Patient serum creatinine was 1.29 mg/dl and the C-reactive protein was 5.24 mg/dl without leukocytosis. Urine culture showed no growth.

With the patient under spinal anaesthesia in the lithotomy position, we performed a left ureteroscopy with 7 Fr semirigid ureteroscope. A 200 µm Holmium-YAG (Ho:YAG) laser was used for stone fragmentation. The fragments

were removed with 1.9 Fr nitinol stone retrieval basket. A guidewire was passed through the ureter and the renal pelvis before the ureteroscopy. Final left retrograde pyelography showed no contrast leakage. We also performed right ureterorenoscopy that did not reveal any ureteral or renal stones.

At the end of the operation, a 7 Fr open-end catheter was placed in the right kidney and a 6-Fr 26-cm Magnetic Black-Star® stent in the left side. The right open-end catheter was removed one day after surgery and the patient was discharged in the same day with no complication.

The Magnetic Black-Star® stent was easily removed with the magnetic retrieval device 14 days after surgery. The patient did not experience any severe urinary symptom like urgency, frequency or suprapubic discomfort and he did not feel any pain during stent removal.

Stone analysis revealed the presence of monohydrate and dihydrate calcium oxalate. An abdominal ultrasonography performed two months after the procedure showed no residual fragments and no hydronephrosis.

## Discussion

Stent placement after endoscopic surgery is a widespread procedure. Its most frequent indications are ureteral stenosis, ureteral compressions by abdominal or pelvic masses, and after endourological procedure.

Standard stents are generally removed by flexible cystoscopy under local anaesthesia; this can cause morbidity to the patient, including haematuria, dysuria, urgency, incontinence, discomfort or pain and urinary tract infection [7][10].

The use of ureteric string is an alternative of choice for stent extraction without flexible cystoscopy, but most surgeons removed it before the placement for the high risk of stent mislodgement, which has been shown to be up to 15% [11][12].

Stents of several sizes and compositions have been studied in order to minimize urinary stent related symptoms. Nestler et al. recently compared the effect of different diameters of ureteral stent (4.8, 6 and 7 Fr) and stated that best USSQ results were in favour of smaller stents [13]. Nonetheless Betschart et al. published a review in which they did not find any statistical correlation between ureteral stent diameter and stent related symptoms [14].

Magnetic Black-Star® ureteral stent consisted of a soft polyurethane body with a magnetic bead at the distal end of the tip. This last part allows a minimally invasive method of stent removal with a magnetic disposable retrieval device, thus avoiding flexible cystoscopy which is associated to higher morbidity for the patients and higher costs of procedure in terms of instruments and healthcare staff.

The stent placement procedure was firstly described by Macaluso [9]. In this case, we performed a left ureteroscopy with laser lithotripsy of a 6mm distal ureteral stone. After the endourological procedure, we placed a Magnetic Black-Star® double J stent.

The patient was dismissed one day after surgery; he had a previous history of ureteral standard double J stent placement with subsequent urological discomfort but in this case he did not experience any urological symptom and the stent extraction was performed without any patient complaint.