



## Oncology

## Ureteral stent obstruction and stent's discomfort are not irreparable damages

Benoît Vogt

Department of Urology, Polyclinique de Blois, 1 rue Robert Debré, 41260, La Chaussée Saint-Victor, France



## ARTICLE INFO

## Keywords:

Ureteral stent  
Renal failure  
Comfort care  
Malignant ureteral obstruction

## ABSTRACT

Ureteral stent obstruction is a significant cause of morbidity and mortality from renal failure.

Alternative options for decompression include tandem ureteral stents but the amount of material in the bladder may severely impair the quality of life.

Following recurrent stent obstruction, a patient was fitted with tandem ureteral stent on both sides with a new nonrefluxing silicone end piece. After this procedure, renal function was improved with normal serum creatinine. The design of the new stent demonstrates the feasibility of the procedure. This new stent currently under prospective evaluation with tolerance questionnaire has demonstrated quite promising results in 10 patients.

## Introduction

Double-J stenting is a common procedure in urology but the stents are poorly tolerated. Ureteral obstruction caused by benign or malignant extrinsic compression is a challenge in the management of stent patency. Obstruction is a significant cause of morbidity and mortality from renal failure. Novel concepts to treat and prevent stent-related symptoms are mandatory.<sup>1</sup>

Alternative options for decompression include tandem ureteral stents and metallic stents.

But the amount of material in the bladder may severely impair the quality of life of patients and induce an additional suffering to the disease.

## Case presentation

A 75-year-old patient was treated for oesophagus cancer with surgery, chemotherapy, radiotherapy, and now immunotherapy.

Ureteric stents insertion was performed for malignant ureteral obstruction with renal failure. Ureteral duplicity requires double stent insertion at the left side (Fig. 1A).

After recurrent stent obstruction, stent replacement with various tumor stents was attempted every month while 6 months. Despite six different procedures, the three stents failed to maintain kidney function (Serum creatinine: 2.7 mg/dL; creatinine clearance: 10.0 mL/min). Moreover, indwelling stents impaired the quality of life with severe incontinence. In this case, indwelling bladder stent was necessary.

Following these failures, a last procedure was attempted with a new stent design. The patient was fitted with tandem ureteral stent on both sides (Fig. 1B). In addition, the stent was modified and the major characteristic was in the replacement of the bladder part of the double-pigtail stent with a nonrefluxing silicone end piece (Fig. 1C). The human use of the silicone end piece was approved by French Ethical Committee and National Medicine Safety Agency (CPP 17-VOGT-01 and 2017-A00205-48, respectively). Patient agreed to be fitted with the silicone end piece. A polyurethane double-pigtail tumor stent 8F was sectioned perpendicularly, ensuring that the stent remains long enough to descend at the ureteral meatus. A silicone end piece was embedded at the bottom of the sectioned stent.

After this procedure, renal function was improved with serum creatinine and creatinine clearance at 1.0 mg/dL and 27.0 mL/min, respectively. Bladder stent has been removed.

In few weeks, health-related quality of life was improved.

At 3-month post-placement, patency has been confirmed by endoscopy, retrograde ureterography and, serum creatinine (0.9 mg/dL). No dislodgment and no calcification were encountered.

## Discussion

The perfect ureteral stent should demonstrate optimal patency and should be well tolerated by the patient.<sup>2</sup>

With a ureteral obstruction, stent replacement is required and quality of life is negatively affected by the need for frequent stent changes.<sup>3</sup> Moreover, kidney failure is a barrier to chemotherapy.

Dr. Benoît Vogt has made all of the following: (1) the conception and design of the study, acquisition of data, analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

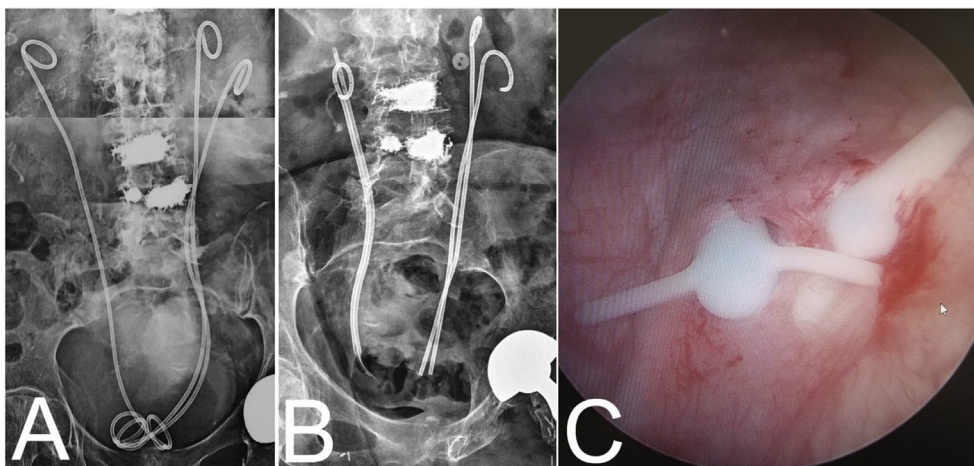
E-mail address: [message@benoitvogt.fr](mailto:message@benoitvogt.fr).

<https://doi.org/10.1016/j.eucr.2018.07.025>

Received 2 May 2018; Received in revised form 25 July 2018; Accepted 26 July 2018

Available online 29 July 2018

2214-4420/ © 2018 The Author. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



**Fig. 1.** (A) Appearance of tumor stents on X-ray with renal failure and incontinence. (B) Sectioned tandem ureteral stents with nonrefluxing silicone end piece. (C) Endoscopic appearance of silicone end piece in left ureteral meatus.

Tandem stents have developed as alternatives to single ureteral stents, while maintaining internal drainage. It is believed that tandem better resist obstruction by providing a space in between the two stents that is difficult to compress.<sup>4</sup>

However, the presence of 4 loops may not be well tolerated and impaired the quality of life with severe incontinence. It has been suggested that pelvic symptoms could be decreased by reducing the amount of material in the bladder.<sup>5</sup> The replacement of the bladder loop with a small smooth silicone end piece results in the presence of only tiny amounts of material in the bladder.

### Conclusion

In this case presentation, the design of the silicone end piece demonstrates the feasibility of the procedure. The better tolerance of the silicone end piece may lead to largely use tandem ureteral stents and, thus prevent renal failure. This new stent currently under prospective evaluation with tolerance questionnaire has demonstrated quite promising results in 10 patients.

### Conflicts of interest

None.

### References

1. Betschart P, Zumstein V, Piller A, Schmid HP, Abt D. Prevention and treatment of symptoms associated with indwelling ureteral stents: a systematic review. *Int J Urol*. 2017 Apr;24(4):250–259. <https://doi.org/10.1111/iju.13311>.
2. Al-Aown A1, Kyriazis I, Kallidonis P, et al. Ureteral stents: new ideas, new designs. *Ther Adv Urol*. 2010 Apr;2(2):85–92. <https://doi.org/10.1177/1756287210370699>.
3. Liatsikos E, Kallidonis P, Kyriazis I, et al. Ureteral obstruction: is the full metallic double-pigtail stent the way to go? *Eur Urol*. 2010 Mar;57(3):480–486. <https://doi.org/10.1016/j.eururo.2009.02.004>.
4. Elsamra SE, Leavitt DA, Motato HA, et al. Stenting for malignant ureteral obstruction: tandem, metal or metal-mesh stents. *Int J Urol*. 2015 Jul;22(7):629–636. <https://doi.org/10.1111/iju.12795>.
5. Vogt B, Desgrappes A, Desfemmes FN. Changing the double-pigtail stent by a new suture stent to improve patient's quality of life: a prospective study. *World J Urol*. 2015 Aug;33(8):1061–1068. <https://doi.org/10.1007/s00345-014-1394-2>.