Case Report

Cut-to-the-light technique is useful for complete obstruction of a Wallace ureteroileal anastomosis

Ichiro Tsuboi, Shuhei Yokoyama, Hirochika Nakajima, Saori Yosioka, Yusuke Kobayashi, Taichi Nagami, Kohei Ogawa and Koichiro Wada

Department of Urology, Shimane University Faculty of Medicine, Shimane, Japan

Abbreviations & Acronyms
RC = radical cystectomy
UA = ureteroileal anastomosis

Correspondence: Ichiro Tsuboi M.D., Department of Urology, Shimane University Faculty of Medicine, 89-1, Enya-cho, Izumo, Shimane 693-8501, Japan. Email: ichiro.tsuboi0810@gmail.com

How to cite this article: Tsuboi I, Yokoyama S, Nakajima H *et al*. Cut-to-the-light technique is useful for complete obstruction of a Wallace ureteroileal anastomosis. *IJU Case Rep*. 2023; 6: 154–156.

Received 26 November 2022; accepted 18 January 2023. Online publication 3 February 2023

Introduction: Obstruction of a ureteroileal anastomosis after urinary diversion is an unpleasant situation for patients and clinicians alike.
Case presentation: A 48-year-old man who underwent a radical cystectomy for muscle-invasive bladder cancer and urinary diversion using the Wallace technique complained of right back pain. Computed tomography showed right hydronephrosis. Cystoscopy via the ileal conduit revealed complete obstruction of the ureteroileal anastomosis. We performed a bilateral approach (antegrade and retrograde) to use the cut-to-the-light technique. A guidewire and 7Fr single J catheter could be inserted.
Conclusion: The cut-to-the-light technique was useful for complete obstruction of the ureteroileal anastomosis, the length of which was <1 cm. Herein, we report on the cut-to-the-light technique with a literature review.

Key words: cut-to-the-light technique, Ho:YAG laser, Wallace ureteroileal anastomosis.

Keynote message

Complete obstruction of a Wallace ureteroileal anastomosis is a rare case. We performed the laser incision by using the cut-to-the-light technique. We could safely pass the obstruction and insert the 7Fr single J stent.

Introduction

Benign obstruction or stricture of a UA after urinary diversion is a rare condition. The rate of strictures has been reported to be 4%–9%.[1] Kouba *et al*. reported that there were no strictures with use of the Wallace technique.[2] Therefore, the treatment strategy for UA obstruction or strictures has not been established.

Historically, open anastomotic revision is the gold standard for management of UA strictures; endourologic management has had a lower success rate for decades.[3] With the evolution of devices for endourologic management, including laser systems, ureteroscopy, and fluoroscopy, some researchers recently advocated for the endourologic management as first-line treatment.[4]

Herein, we report that endoscopic management of the cut-to-the-light technique is useful for complete obstruction of a UA after a RC.

Case presentation

A 48-year-old male was referred to our institution for evaluation of macrohematuria. The medical history was significant for hypertension. A contrast-enhanced CT and MRI showed muscle invasive bladder cancer. The urine cytology was class IV. A transurethral resection of the bladder tumor was performed. The histopathological evaluation revealed an invasive urothelial carcinoma (pT2 or more). The patient underwent a robot-assisted laparoscopic RC with ileal conduit diversion after 2 courses of chemotherapy (combination gemcitabine and cisplatin). A UA was performed using the Wallace technique with 4-0 polydioxanone. The serum creatinine was 0.86 mg/dL before removing both ureteral stents. The right ureteral stent was removed on postoperative day 12 and the left ureteral stent was removed on

postoperative day 13. The patient was discharged from the hospital on postoperative day 28. After 2 months he complained of right back pain. A CT revealed right hydronephrosis and blood testing showed an elevated serum creatinine (2.89 mg/dL). There was no evidence of tumor recurrence on CT, magnetic resonance urography, and urine cytology. We performed a retrograde approach using flexible cystoscopy for urine drainage. Neither the contrast medium nor the guidewire passed to the right ureter. We diagnosed a complete obstruction of the UA and placed an 8.3 Fr pigtail nephrostomy tube in the right kidney. The serum creatinine decreased to 1.45 mg/dL following placement of the pigtail nephrostomy tube. We then performed the simultaneous antegrade and retrograde endoscopic management to determine the length of the obstruction under general anesthesia in the Valdivia position. A 16.2 Fr cystoscope (CYF Type VA2; OLYMPUS, Japan) and a ureteroscope (LithoVue™; Boston Scientific, USA) were inserted via the ileal conduit into the distal end of the obstruction via the right percutaneous nephrostomy to the proximal end of the obstruction. We confirmed that each endoscopic light nearly touched using fluoroscopy, and the length of the complete obstruction was <1 cm (Fig. 1c). Therefore, we decided to use the cut-to-the-light technique to pass through the obstruction. An incision was made using a Ho:YAG laser (0.5J, 5 Hz) from the cystoscope to the light of the ureteroscope. As the strength of the light increased gradually, we continued to laser incise with confidence (Fig. 2d). A 0.035″ guidewire was passed via the antegrade ureteroscopy and extracted by forceps via the cystoscope. A 7 Fr single J stent was retrograde-inserted, and the nephrostomy tube was removed. A CT scan was performed and there were no postoperative complications.

Discussion

Urine leakage, ureteral tension, excessive stripping of the urethral adventitia, and chronic inflammation can lead to ureteral ischemia, fibrosis, and UA strictures. Westerman *et al.*[5] reported that the stricture was 9.2% (232/2523), most of which were benign (83.6%). Westerman *et al.*[5] also reported that the time to diagnosis of malignant and benign UA strictures was 32.4 and 7.2 months, respectively. In our case, the time to diagnosis of benign UA strictures was 2 months. Some reports have stated that the UA stricture rates do not differ between the Wallace and Briker techniques. Although there is no significant difference between the Wallace and Briker techniques, the Briker technique has a higher stricture complication rate than the Wallace technique.[2,6] Therefore, we believe that complete obstruction of a UA, as in our case, is a rare situation for clinicians.

Although there is no established treatment strategy for UA strictures, an open surgical technique was believed to be the gold standard treatment until the endoscopic technology is advanced. However, nowadays, some reports advocate endoscopic management as a first-line treatment option.[4,7] The choice of the treatment depends on stricture length and patency. These factors predict the success of the endoscopic treatment, including balloon dilation, cold cut, and holmium laser incision. A stricture length >1 cm and complete obstruction are factors associated with treatment failure.[4,8] Because the length of the obstruction was <1 cm in our case, we chose endoscopic management.

When the UA is completely obstructed, a bilateral approach should be used to measure the length of the obstruction and to decide whether endourologic management can be performed.[8] Performing an incision by endoscopy using the cut-to-the-light technique is useful for detecting the incision point. The method of the technique is similar to previous reports. We turned off the cystoscope light and performed the incision using a holmium laser toward the brightest point of the ureteroscope light. We used the LithoVue™ to prepare for damage by the holmium laser.

Conclusion

We have reported the successful treatment of a UA complete obstruction using the cut-to-the-light technique without any postoperative complications. This technique can be an effective treatment when the obstruction length is <1 cm.

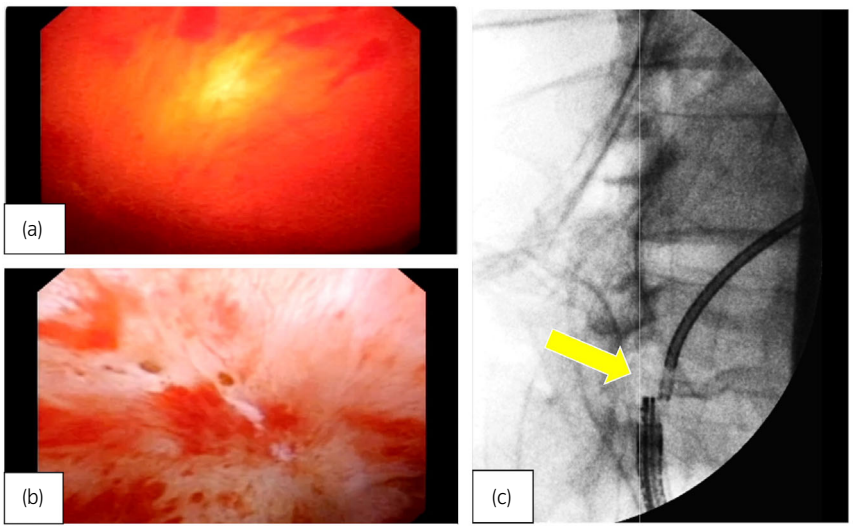

Fig. 1 (a) This is the view from the cystoscope via the ileal conduit. We could see the ureteroscope light (LithoVue™) through the complete obstruction. (b) Same view as (a) after turning on the cystoscopy light. (c) Yellow arrow indicates ureteroileal obstruction.

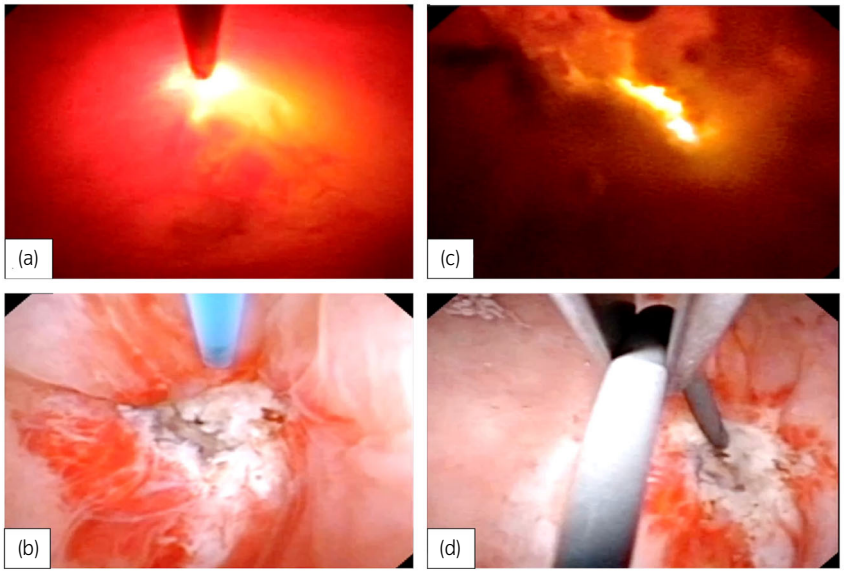

Fig. 2 (a) The incision was performed toward the ureteroscope light via cystoscope using a 200 μm holmium:YAG laser fiber. (b) The obstruction has not been penetrated after incising the mucosa. (c) The light is brighter than (a). We performed an additional incision toward the light. (d) Finally, we passed a 0.035″ guidewire via the ureteroscope. The guidewire was caught and extracted by forceps via a cystoscope.

Author contributions

Ichiro Tsuboi: Writing – original draft. Shuhei Yokoyama: Writing – review and editing. Hirochika Nakajima: Writing – review and editing. Saori Yosioka: Writing – review and editing. Taichi Nagami: Writing – review and editing. Yusuke Kobayashi: Writing – review and editing. Kohei Ogawa: Writing – review and editing. Koichiro Wada: Supervision; writing – review and editing.

Conflict of interest

The authors declare no conflict of interest.

Approval of the research protocol by an institutional reviewer board

Not applicable.

Informed consent

Informed consent was obtained from the patient.

Registry and the registration no. of the study/trial

Not applicable.

References

1 Anderson CB, Morgan TM, Kappa S *et al*. Ureteroenteric anastomotic strictures after radical cystectomy-does operative approach matter? *J. Urol.* 2013; **189**: 541–7.
2 Kouba E, Wallen EM, Pruthi RS. Management of ureteral obstruction due to advanced malignancy: optimizing therapeutic and palliative outcomes. *J. Urol.* 2008; **180**: 444–50.
3 Laven BA, O'Connor RC, Gerber GS, Steinberg GD. Long-term results of endoureterotomy and open surgical revision for the management of ureteroenteric strictures after urinary diversion. *J. Urol.* 2003; **170**: 1226–30.
4 Gomez FD, Thomas A, Sempels M *et al*. Outcomes following first-line endourologic management of ureteroenteric anastomotic strictures after urinary diversion: a single-center study. *Urology* 2017; **102**: 38–42.
5 Westerman ME, Parker WP, Viers BR *et al*. Malignant ureteroenteric anastomotic stricture following radical cystectomy with urinary diversion: patterns, risk factors, and outcomes. *Urol. Oncol.* 2016; **34**: 485.
6 Davis NF, Burke JP, McDermott T, Flynn R, Manecksha RP, Thornhill JA. Bricker versus Wallace anastomosis: a meta-analysis of ureteroenteric stricture rates after ileal conduit urinary diversion. *Can. Urol. Assoc. J.* 2015; **9**: E284–90.
7 Herrmann TR, Liatsikos EN, Nagele U, Traxer O, Merseburger AS, EAU guidelines panel on lasers, technologies. EAU guidelines on laser technologies. *Eur. Urol.* 2012; **61**: 783–95.
8 Hu W, Su B, Xiao B *et al*. Simultaneous antegrade and retrograde endoscopic treatment of non-malignant ureterointestinal anastomotic strictures following urinary diversion. *BMC Urol.* 2017; **17**: 61.