Which is better in patients with hydronephrosis before radical cystectomy—percutaneous nephrostomy versus internal ureteral stents

Bum Sik Tae¹, Ja Hyeon Ku²

¹Department of Urology, Korea University Asan Hospital, Ansan, Republic of Korea; ²Department of Urology, Seoul National University Hospital, Seoul, Republic of Korea

Correspondence to: Ja Hyeon Ku, MD, PhD. Department of Urology, Seoul National University Hospital, 101 Daehak-ro, Jongno-gu, Seoul 110-744, Republic of Korea. Email: kuuro70@snu.ac.kr.

Provenance: This is a Guest Editorial commissioned by Section Editor Xiao Li (Department of Urologic Surgery, The Affiliated Cancer Hospital of Jiangsu Province of Nanjing Medical University, Nanjing, China).

Comment on: Kiss B, Furrer MA, Wuethrich PY, et al. Stenting Prior to Cystectomy is an Independent Risk Factor for Upper Urinary Tract Recurrence. J Urol 2017;198:1263-8.

Submitted Oct 16, 2017. Accepted for publication Oct 24, 2017. doi: 10.21037/tau.2017.10.08 View this article at: http://dx.doi.org/10.21037/tau.2017.10.08

Urothelial bladder cancer (UBC) is the second most common type of malignancy in the urinary tract with high frequency of recurrence and high progression rate (1). European Urology Association (EAU) guidelines recommend radical cystectomy (RC) for muscle invasive bladder cancer or non-muscle invasive bladder cancer at highest risk of progression (2). Adjuvant chemotherapy after RC can be considered for high-risk M0 patients, such as pT3/4 and/or lymph node-positive disease (3). However, more than half of patients revealed hydronephrosis (HN) at time of RC and often require adjuvant chemotherapy. Cisplatin-based CTx, especially in patients with renal insufficiency, is a critical issue related to patient survival. For save renal function and treat HN, we may consider internal ureteral stenting (IUS) or percutaneous nephrostomy (PCN) tube insertion. Both procedures are well-established techniques for rapidly relieving ureteral obstruction and improving renal function. However, optimal management of malignant ureteral obstruction remains unclear before RC.

Several investigators have suggested the PCN tube should be the method of choice in extrinsic obstruction caused by advanced malignancy (4). However, it is more invasive than IUS and may be associated with greater incidence of accidental tube dislodgement, and thus may reduce patient's quality of life (5). Thus, several clinicians may consider IUS for previous reasons when HN is present before RC. However, because of the possibility that urothelial cell carcinoma in bladder may migrate to upper urinary tract (UUT) through IUS, there is controversy about the urine diversion method before RC.

The concept that urothelial cell carcinoma in the bladder affects the upper tract when accompanied by urine reflux was introduced in 1992 (6). Palou *et al.* have hypothesized that many UUT recurrence can recur when reflux is conducted after cutting the ostium of the bladder. Considering that ureteral stent may cause reflux, this concept has vague suspicion that the urine reflux may cause UUT recurrence in the presence of BC, but there is scant study about this. In previous studies, there was no analysis of if stenting caused recurrence or not.

Previously, Ku *et al.* and Wong *et al.* reported about the ureteral stenting method to solve ureteral obstruction caused by malignant tumors (7,8). Studies comparing the two methods in cancer patients revealed similar morbidity rates in the two groups but slightly better decompression rates in patients receiving PCN. However, previous reports included palliative cases of ureteral obstruction or extrinsic obstruction of non-urothelial cell malignant tumors in patients that could not undergo surgery. No comparative study of patients with BC was available. Kiss *et al.* recently published notable results of IUS prior to cystectomy is an independent risk factor for UUT recurrence in the *Journal of Urology*; those authors focused on advanced bladder cancer patients with HN needing prompt urinary diversion before RC (9). It is significant that this study supports existing hypothesis that urine reflux caused by IUS can cause UUT recurrence and suggests objective evidence. To our knowledge, this is the first study to reveal the difference in UUT recurrence according to the difference in urine diversion before surgery when HN is conducted in patients that undergo RC.

In this study, 226 patients presented HN before RC. Among them, approximately 50% (114/226) of patients with preoperative HN [comprising 11% (114/1,005) of all patients] had pre-operative drainage: 53/114 (46%) had pre-operative IUS, 61/114 (54%) received a PCN tube preoperatively. Notably, 3% (31/1,005) of patients developed an UUT recurrence after a median follow-up from RC of 17 months (range, 3-147 months): 13% (7/53) in the IUS group, 0% (0/61) in the PCN group, and 3% (24/891) in the 'no drainage' group in their retrospective study. In multivariate analysis, IUS revealed independent variables for UUT recurrences. Considering these results, the authors suggest that IUS before RC could be a significant risk factor of UUT recurrence in patients with bladder cancer. The authors suggest that reasons for the analysis of IUS as a risk factor for UUT recurrence are as follow. First, IUS converts a non-refluxing into a refluxing system, thus facilitating constant tumor cell seeding and implantation from the bladder into the UUT. Another possible reason is retrograde manipulation during stent insertion, which may actively flush tumor cells into the UUT.

Although the study by Kiss *et al.* provided notable results of UUT recurrence in patients with bladder cancer, particularly focusing on pre-operative stenting, retrospective design is critical limitations (9). In addition, PCN group patients had worse significantly higher tumor stages and higher Charlson Comorbidity Index scores than IUS group in their cohort. Particularly, patients with PCN group had lower cancer specific survival, so there is a possibility that UUT recurrence was low when many died before revealing UUT recurrence than IUS group. Although this study is a large sample study, these limitations leave many researchers debating about the finding that pre-operative IUS increases recurrence rate. These limitations of study revealed prospective randomized studies adjust comorbidities and tumor stage is needed for establish treatment guidelines. In summary, vague conjecture that UUT recurrence can be caused by IUS before RC proved its objectivity. It is recommended that patients with NMIBC as well as patients with radial cystectomy should be aware of the possibility of UUT recurrence depending on how they are treated with HN. However, as there is controversy, we expect a well-designed prospective study in the future to establish treatment guidelines.

Acknowledgements

Funding: This study was supported by the Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (No. 2016R1D1A1A02936950).

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

- 1. Burger M, Catto JW, Dalbagni G, et al. Epidemiology and risk factors of urothelial bladder cancer. Eur Urol 2013;63:234-41.
- Rouprêt M, Babjuk M, Compérat E, et al. European Association of Urology Guidelines on Upper Urinary Tract Urothelial Carcinoma: 2017 Update. Eur Urol 2017. [Epub ahead of print].
- Alfred Witjes J, Lebret T, Compérat EM, et al. Updated 2016 EAU Guidelines on Muscle-invasive and Metastatic Bladder Cancer. Eur Urol 2017;71:462-75.
- Park DS, Park JH, Lee YT. Percutaneous nephrostomy versus indwelling ureteral stents in patients with bilateral nongenitourinary malignant extrinsic obstruction. J Endourol 2002;16:153-4.
- Lau MW, Temperley DE, Mehta S, et al. Urinary tract obstruction and nephrostomy drainage in pelvic malignant disease. Br J Urol 1995;76:565-9.
- Palou J, Fariña LA, Villavicencio H, et al. Upper tract urothelial tumor after transurethral resection for bladder tumor. Eur Urol 1992;21:110-4.
- Wong LM, Cleeve LK, Milner AD, et al. Malignant ureteral obstruction: outcomes after intervention. Have things changed? J Urol 2007;178:178-83; discussion 183.

Translational Andrology and Urology, Vol 6, No 6 December 2017

8. Ku JH, Lee SW, Jeon HG, et al. Percutaneous nephrostomy versus indwelling ureteral stents in the management of extrinsic ureteral obstruction in advanced malignancies: are there differences? Urology 2004;64:895-9.

Cite this article as: Tae BS, Ku JH. Which is better in patients with hydronephrosis before radical cystectomy—percutaneous nephrostomy versus internal ureteral stents. Transl Androl Urol 2017;6(6):1195-1197. doi: 10.21037/tau.2017.10.08

 Kiss B, Furrer MA, Wuethrich PY, et al. Stenting Prior to Cystectomy is an Independent Risk Factor for Upper Urinary Tract Recurrence. J Urol 2017;198:1263-8.