



Resonance metallic ureteric stent in a case of ketamine bladder induced bilateral ureteric obstruction with one year follow up



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ABSTRACT

INTRODUCTION: Upper urinary tract occlusion is well recognized in patients with chronic ketamine abuse. The mechanism is generally unknown, but the ulcerative cystitis contracture may be responsible for obstruction. We present the first reported use of the Resonance metallic ureteric stent in the management of ureteric obstruction caused by ketamine-induced uropathy.

PRESENTATION OF CASE: A 31-year-old lady with one-year history of recreational ketamine abuse presented with symptoms related to drug-induced ulcerative cystitis over twelve-months. She presented with acute renal failure with bilateral pyonephrosis and sepsis, and was initially treated with bilateral nephrostomy insertions and antegrade stenting. The J stents recovered the renal function, but the patient suffered from recurrent urinary tract infections (UTI's) with the prosthesis in-situ. The patient successfully underwent bilateral insertion of 12 cm 6.0 French Cook Resonance metallic ureteric stents. One year following the placement of the metallic stents, the patient maintained optimal renal function with no episode of UTI.

DISCUSSION: Ketamine induced uropathy is a well documented complication of chronic drug-induced ulcerative cystitis. The mechanical strength and inert property of metallic ureteric stents make it an ideal device to manage this problematic benign cause of ureteric obstruction.

CONCLUSION: This is the first reported case of therapeutic bilateral metallic ureteric stents in the management of patients with ketamine induced uropathy with one year follow up.

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1. Introduction

Ketamine, an anaesthetic agent introduced in 1960's has currently become a common recreational drug. Street ketamine abuse is associated with a serious urological condition termed as ketamine associated ulcerative cystitis, in which patients typically present with severe lower urinary tract symptoms with dysuria and haematuria [1].

The involvement of upper urinary tract is often observed in ketamine induced uropathy (KIU) [2,3]. The incidence of KIU with accompanying upper tract obstruction ranging from 13–51% [2–4]. The severity of the obstruction is dose dependent on the abuser (Fig. 1).

The management of the upper tract KIU is necessary in the presence of worsening renal function or pyonephrosis. Retrograde pyelogram following cystoscopy may be impossible due to

bladder contracture. Therefore, the insertion of nephrostomy tube followed by antegrade ureteric stenting may be the only suitable treatment option for patient.

The efficacy of chronic indwelling ureteric stents in patients with KIU is not well documented in medical literature. The common complications of the utilization of double J stents in patient benign and malignant ureteric obstruction include pain, haematuria, infection and failure of the stent due to worsening obstruction.

In this case report we evaluate effectiveness of treating patient with KIU using metallic ureteric stent with one year follow up.¹

2. Presentation of case

A 31-year-old lady, who is known to have regular contact with recreational ketamine presented with severe lower urinary tract

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¹ KIU: ketamine induced uropathy.



Fig. 1. CT scan shows bilateral hydronephrosis associated with pyonephrosis (black arrows).

symptoms and haematuria. Her initial ultrasound of the urinary tract and renal function was normal.

One year following her initial presentation, the patient began to get intermittent urinary tract infections. CT scan revealed bilateral mild to moderate hydronephrosis. There was deterioration in her renal function as well.

The patient then presented with sepsis and acute kidney injury. She had developed pyonephrosis, which was treated with bilateral nephrostomy drainage. Following the initial acute phase, the patient underwent bilateral antegrade JJ stenting to manage the chronic bilateral KIU.

The patient experienced intermittent pain and severe haematuria and anemia for which she required a transfusion. One month following the ureteric stent in placement, her renal function continued to deteriorate and she presented with urosepsis. In view of the presence of persistent, unresolved infection and obstruction, the polymer ureteric stent was removed and nephrostomy drainage tubes were left in situ.

At this point, further management options considered included the insertion of larger caliber polymer ureteric stents or metallic stents.

In view of shorter term efficacy of polymer stent, bilateral antegrade insertion of 12 cm (6.0 French) Cook Resonance metallic ureteric stent was performed under local anaesthetic. The patient made an uneventful recovery and was followed up on three monthly basis with urine culture and renal function tests.

Twelve months following the Resonance stent, the patient had stable renal function with minimal haematuria. One episode of UTI was detected one month following the treatment. No further positive bacterial growth were detected on urine culture on subsequent visits

3. Discussion

KIU has become more prevalent in recent years and will continue to be challenging for clinicians to deal with its chronic complications. The detection of hydronephrosis in patients with KIU is apparent in nearly half of the patients [5] and may indicate early obstruction that can subsequently lead to irreversible renal impairment with concomitant infection.

The accepted treatment options of chronic ureteric obstruction is polymer double J stent that has been introduced since 1970s. Although the efficacy of such treatment modality is well

documented, the related complications such as stent migration encrustation, haematuria, UTI, blockage and stent failure due to extrinsic compression are equally well known [6].

The other disadvantage of chronic polymer stenting is the need for periodic stent changes, incurring costs and operative risks.

The Resonance metallic stent is a tightly coiled nickel cobalt chromium molybdenum alloy. This prosthesis has different characteristics compared to the early generation self-expandable devices primarily used for malignant obstruction [7–8]. The advantages of Resonance stent include enhanced tensile strength and longer dwell time [9]. Five year experience of the utilization of such metallic stent for chronic obstruction also demonstrated no significant problem with encrustation, haematuria or infection [10].

In this case study, we present a one year outcome of Resonance stent in the management of KIU with maintenance of renal function, resolution of recurrent urinary tract infection and haematuria in a patient who did not tolerate polymer JJ stent.

4. Conclusion

To our knowledge, this is the first case of therapeutic metallic ureteric stent insertion in the treatment of KIU with favorable one year follow up.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions

GL Yong: writing the paper, data collection. CY Kong: writing the paper. MWX Ooi: writing the paper. EG Lee: writing the paper, supervision.

Consent

Consent was written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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References

- [1] R. Shahani, C. Streutker, B. Dickson, et al., Ketamine-associated ulcerative cystitis: a new clinical entity, *Urology* 69 (2007) 810–812.
- [2] P.S. Chu, W.K. Ma, S.C. Wong, et al., The destruction of the lower urinary tract by ketamine abuse: a new syndrome, *BJU Int.* 102 (2008) 1616–1622.
- [3] Y.C. Huang, C.M. Jeng, T.C. Cheng, Ketamine-associated ulcerative cystitis, *Tzu Chi Med. J.* 20 (2008) 144–146.
- [4] K. Mason, A.M. Cottrell, A.G. Corrigan, et al., Ketamine-associated lower urinary tract destruction: a new radiological challenge, *Clin. Radiol.* 65 (2010) 795–800.
- [5] L.K. Huang, J.H. Wang, S.H. Shen, et al., Evaluation of the extent of ketamine-induced uropathy: the role of CT urography, *Postgrad. Med. J.* 90 (2014) 185–190.
- [6] J.W. Slaton, K.A. Kropp, Proximal ureteral stent migration: an avoidable complication? *J. Urol.* 155 (1996) 58–61.
- [7] G.A. Barbalias, D. Siablis, E.N. Liatsikos, et al., Metal stents: a new treatment of malignant ureteral obstruction, *J. Urol.* 158 (1997) 54.
- [8] S.S. Pandian, J.K. Hussey, S. McClinton, Metallic ureteric stents: early experience, *Br. J. Urol.* 82 (1998) 791.
- [9] K. Hendlin, E. Korman, M. Monga, New metallic ureteral stents: improved tensile strength and resistance to extrinsic compression, *J. Endourol.* 26 (2012) 271.
- [10] A.O. Kadlec, C.S. Ellimoottil, K.A. Greco, et al., Five-year experience with metallic stents for chronic ureteral obstruction, *J. Urol.* 190 (2013) 937–941.

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