



## Conservative management of retrocaval Ureter: A case series



Jia Min Yen, Lui Shiong Lee\*, Christopher Wai Sam Cheng

Department of Urology, Singapore General Hospital, 20 College Road, 169856, Singapore

### ARTICLE INFO

#### Article history:

Received 13 May 2015

Received in revised form 5 August 2015

Accepted 15 August 2015

Available online 22 August 2015

#### Keywords:

Retrocaval ureter

Circumcaval ureter

Preureteral vena cava

Conservative management

### ABSTRACT

**INTRODUCTION:** Retrocaval ureter is a rare congenital anomaly with the ureter passage posterior to the inferior vena cava. Surgical repair is suggested for patients with significant functional obstruction. However, there is little literature to suggest the management of asymptomatic patients.

**CASE PRESENTATION:** Case 1 patient is a 29 year-old Indonesian man and case 2 patient is a 41 year-old Malay man. Both patients were asymptomatic and well.

**DISCUSSION:** This report is the short follow-up, therefore making it impossible to elucidate the natural history of uncorrected retrocaval ureters.

**CONCLUSION:** At 8 month and 6 month respectively, they remained well without symptoms. Our report suggests that immediate surgical repair is not always needed. Longer follow-up with larger patient population is needed to formally elucidate the natural history of this uncommon condition.

© 2015 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### 1. Introduction

Retrocaval ureter, also known as preuretral vena cava or circumcaval ureter, is a rare congenital anomaly where the ureter passes posterior to the inferior vena cava. Initially considered as aberration in ureteric development, current studies in embryology consider it as aberration in the development of inferior vena cava [1,2]. It can be classified into two types. Type one, the more common form, has moderate or severe hydronephrosis and 'S' or 'fish-hook' deformity of the ureter at the point of obstruction and type two has mild hydronephrosis and 'sickle-shaped' curve of the ureter at the point obstruction [3]. Most reports have focused on techniques of surgical correction for symptomatic patients with significant functional obstruction. However, there is little literature to suggest the management of asymptomatic patients. We present two cases of retrocaval ureter with significant proximal hydroureteronephrosis, incidentally diagnosed in patients and managed conservatively with no sequelae with medium term follow-up.

### 2. Case presentation

Case 1 patient is a 29 year-old Indonesian male with microscopic haematuria at health screening. Clinical examination was unremarkable. Ultrasonography revealed moderate right hydronephrosis, which was confirmed on computed tomography

(CT) scan as a retrocaval ureter passing posterior to the inferior vena cava (IVC) (Fig. 1). Tc-99m MAG3 renogram demonstrated no significant right renal outflow tract obstruction. He was offered surgery but opted for watchful waiting. He remained well eight months after diagnosis.

Case 2 patient is a 41 year-old Malay male with incidental hydro-ureteronephrosis at health screening. He was asymptomatic. Clinical examination was unremarkable. CT scan revealed right hydronephrosis secondary to right-sided retrocaval ureter, which was seen to make a tight bend around the IVC. Surgery was offered but patient opted for watchful waiting. Tc-99m MAG3 renogram on subsequent follow-up showed good excretory function of the right kidney with no evidence of obstruction (Fig. 2). He was well at six months follow-up.

### 3. Discussion

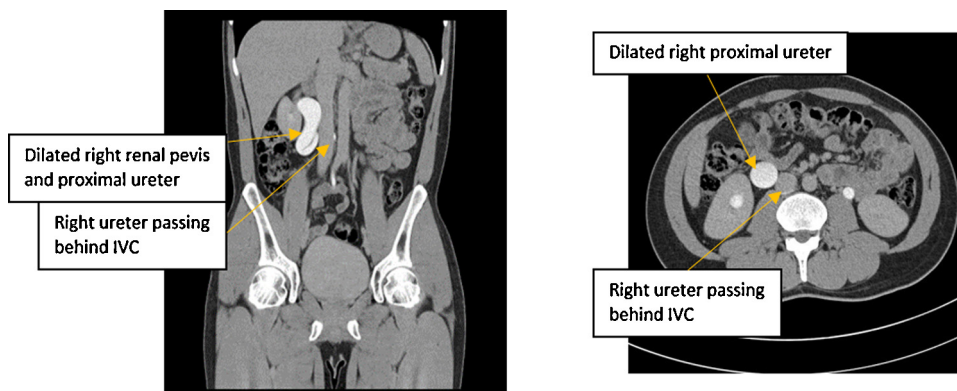
There is little discussion on the role of watchful waiting but it has been suggested for asymptomatic patients with minimal caliectasis [4]. Cao Avellaneda et al. reported a case of type two retrocaval ureter managed conservatively [5]. However, there is no precedent literature reporting conservative management of type one retrocaval ureters. To our knowledge, this report may be the first to suggest that watchful waiting is feasible.

MAG3-renogram that demonstrate no significant outflow tract obstruction provides clinical confidence that watchful waiting may be feasible. In our patients, discrepancy between the severity of hydronephrosis, and the respective excretory curves on renogram, suggests that urinary obstruction related to retrocaval ureters have a functional and dynamic aspect.

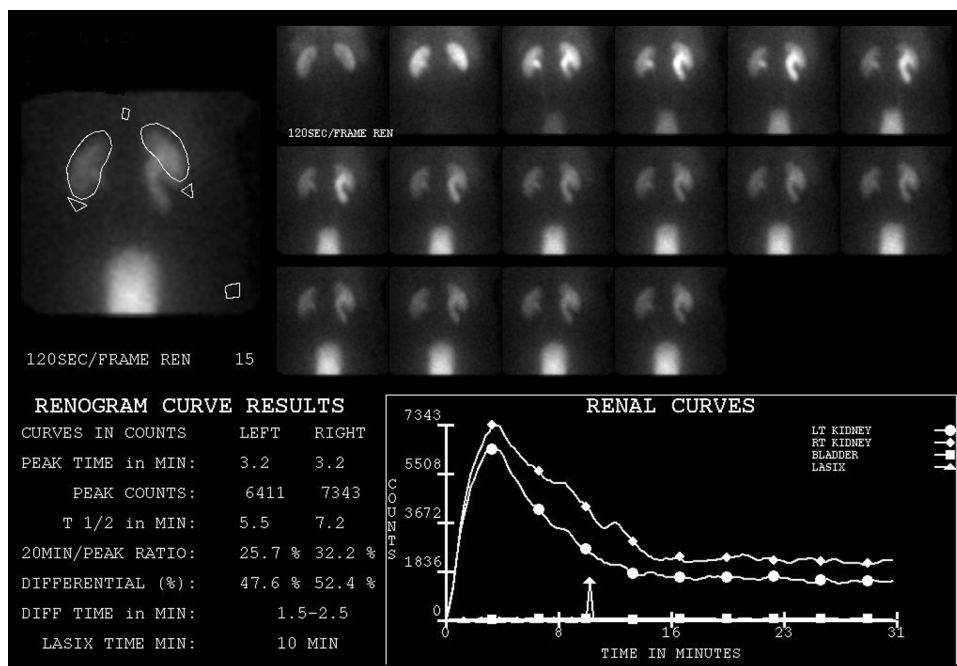
\* Corresponding author.

E-mail addresses: [jiamin.yen@mohh.com.sg](mailto:jiamin.yen@mohh.com.sg)

(J.M. Yen), [Lee.lui.shiong@sgh.com.sg](mailto:Lee.lui.shiong@sgh.com.sg) (L.S. Lee), [Christopher.cheng.w.s@sgh.com.sg](mailto:Christopher.cheng.w.s@sgh.com.sg) (C.W.S. Cheng).



**Fig. 1.** Coronal and sagittal cuts of CT scan showing retrocaval ureter; the CT scan images show dilated right renal pelvis and ureter which passes behind the inferior vena cava.



**Fig. 2.** MAG-3 renogram demonstrating no obstruction to urinary excretion; The MAG-3 renogram demonstrates good clearance of contrast with no obstruction, indicating good function of both kidneys. The differential function of the left and right kidney is 47.6% and 52.4% respectively.

The potential drawback of watchful waiting is the need for patient compliance. This is compounded by the asymptomatic nature of the disease in most patients. There are costs and risks involved with periodic radiology, especially when most patients are young. Ultrasonography may attenuate radiation exposure but it is operator dependent and does not give a functional assessment of renal excretion.

A shortcoming of this report is the short follow-up, therefore making it impossible to elucidate the natural history of uncorrected retrocaval ureters. Being relatively rare, study of its natural history would entail a multi-centre study to recruit sufficient patients with an adequate follow-up.

**4. Conclusion**

We present two cases of Type one retrocaval ureter managed successfully with watchful waiting with a short term follow-up. Surgical correction of retrocaval ureters is not simple. Asymptomatic and functionally unobstructed retrocaval ureters which may show hydronephrosis on anatomical imaging do not need

necessarily need immediate surgery, although symptoms such as renal colic or sustained haematuria or progression of the extent of hydroureteronephrosis may indicate the need for earlier surgical intervention. Conservative management also needs extended regular follow-up of the patients. Longer follow-up with larger patient population is needed to formally elucidate the natural history of this uncommon condition.

**Conflict of interest**

None.

**Funding**

Singapore General Hospital.

**Ethical approval**

CIRB & DSRB granted approval for the study.

**Consent**

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

This study has also been approved by IRB and complies fully with the highest ethical requirements.

**Author contributions**

JM collected the relevant data and results of each patient and wrote the manuscript. LS wrote the manuscript. CC conceptualised the study and edited the manuscript. All authors read and approved the final manuscript.

**Guarantor**

Yen Jia Min.

**Acknowledgement**

None.

**References**

- [1] V.P. Chuang, C.E. Mena, P.A. Hoskins, Congenital anomalies of the inferior vena cava. Review of embryogenesis and presentation of a simplified classification, *Br. J. Radiol.* 47 (1974) 206–213.
- [2] A. Lesma, A. Bocciardi, P. Rigatti, Circumcaval ureter embryology, *Eur. Urol. (Suppl 5)* (2006) 444–448.
- [3] E.M. Bateson, D. Atkinson, Circumcaval ureter: a new classification, *Clin. Radiol.* 20 (2) (1969) 173–177.
- [4] A. Salonia, C. Maccaagnano, A. Lesma, Diagnosis and treatment of circumcaval ureter, *Eur. Urol. (Suppl 5)* (2006) 449–462.
- [5] E. Cao Avellaneda, G. Server Pastor, A.I. López López, et al., Non-obstructive retrocaval ureter, *Actas Urol Esp.* 29 (Jan 1) (2005) 107–109.

**Open Access**

This article is published Open Access at [scimedirect.com](http://scimedirect.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.