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Short communication

Ureterocystoplasty using the lower pole ureter of a duplex kidney with preservation of ipsilateral renal function

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KEYWORDS

Ureterocystoplasty;
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Abstract

We describe the case of a 9 year old boy with neurogenic bladder dysfunction who co-incidentally had a unilateral duplex kidney with Grade 5 vesico-ureteric reflux into a poorly functioning lower moiety allowing heminephrectomy and ureterocystoplasty with preservation of ipsilateral renal function.

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Introduction

The use of ureter for bladder augmentation was first described by Mitchell in 1992 [1]. Ureter is the tissue of choice for augmentation because of its urothelial lining. Unfortunately, a ureter of suitable calibre is rarely available to the urological surgeon. Ureterocystoplasty avoids the need to use an intestinal segment with its recognised complications of mucus formation, calculi, metabolic acidosis, abnormalities of calcium metabolism and potentially malignancy. Additionally, while surgical techniques are described to produce an urothelial-lined reservoir, such as auto-augmentation or

the use of a de-mucosalised intestinal segment, their place remains unproven [2].

Case report

We present the case of a 9 year old boy born with closed spinal dysraphism. An MRI at 6 months of age revealed a tethered cord at the level of S1/2. He underwent uncomplicated surgical “untethering” at 1 year. Initial urological review revealed a child who had near normal lower limb neurology, but had recurrent UTIs, normal renal function and a normal ultrasound. Cystogram showed no vesico-ureteric reflux and an appropriate capacity bladder.

He was lost to follow-up until 2009 (aged 7 years) when he presented with urinary incontinence and UTIs. Workup now revealed bilateral hydronephrosis. A left duplex kidney was now demonstrated with lower moiety hydroureteronephrosis, AP pelvis 25 mm (see Fig. 1). Cystogram showed a trabeculated bladder with Grade 5 reflux into the left lower moiety (see Fig. 2). A Mag 3 renogram showed no uptake in the left lower moiety and bilateral cortical defects (see Fig. 3). Urodynamic study revealed a poorly compliant bladder with a reduced capacity (60% of expected for age) and a detrusor Leak point pressure of 41 cm H2O.

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Figure 1 Left duplex kidney showing lower moiety hydro-ureteronephrosis.

He was commenced on intermittent self-catheterisation (CIC), anticholinergics and was scheduled for neurosurgical review which revealed re-tethering of his spinal cord on MRI and is under evaluation for re-do surgery. There was some improvement in his bilateral hydronephrosis with CIC. However, he remained incontinent with infected urine despite antibiotic prophylaxis.

We thus elected to perform an open extraperitoneal left lower pole heminephrectomy via a flank incision. The massive lower moiety ureter was carefully dissected off the normal calibre upper moiety ureter. Thereafter a lower midline extra-peritoneal incision was used. The hydroureter was further dissected distally revealing a complete left duplex system. The bladder was opened from the



Figure 2 Cystogram showing Grade 5 vesico-ureteric reflux into left lower moiety.

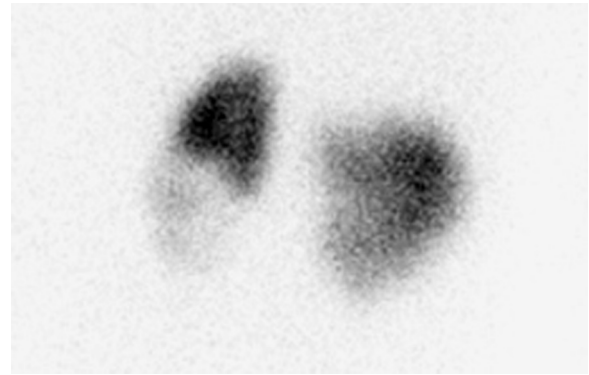


Figure 3 Renogram (Mag 3) showing very poor function left lower moiety and bilateral renal scars.

domes coronally down towards and incising into the patulous laterally placed lower moiety orifice (see Fig. 4). A ureterocystoplasty was performed. Some of the proximal ureter was discarded because of concerns about viability.

Post-operative recovery was uneventful. Sonar showed resolution of hydronephrosis and a cystogram showed an enlargement (from 150 mls pre-op to 300 mls post-op) bladder. He has had no UTIs and is socially continent (he is now diaper free and has transitioned to wearing underpants) at 6 months follow-up. He still uses clean intermittent self-catheterisation and anticholinergic medication.

Discussion

Most published cases of a duplicated collecting system that underwent ureterocystoplasty had bladder dysfunction secondary to either a ureterocele causing bladder outlet obstruction where a dilated upper moiety ureter can be used or associated with massive reflux into a lower moiety [2]. Our case is thus unusual in that the child had a neuropathic bladder incidentally associated with a duplicated collecting system with massive reflux into a poorly functioning lower moiety ureter. Chaim et al. have, however, described a similar clinical picture of a child with a duplex kidney associated with a neuropathic bladder who underwent ureterocystoplasty [5].

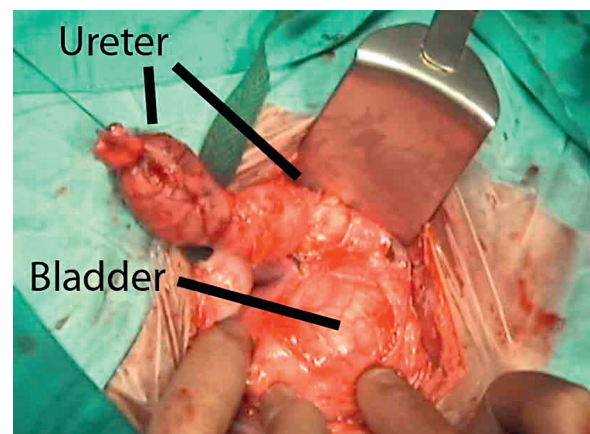


Figure 4 Lower midline incision showing the massively dilated left ureter adjacent to the neuropathic bladder.

One concern about ureterocystoplasty is that it may not provide the same increase in bladder volume as can be expected from enterocystoplasty. This issue is addressed by Zubeita et al. who reviewed a large series of 32 ureterocystoplasty cases. They demonstrated a median increase in bladder capacity of 375% with 92% of patients having clinical improvement [3]. Likewise, Dewan et al. demonstrated that five of their patients had bladder volume increases in excess of four-fold [2]. Others have reported less encouraging results with Husmann et al. cautioning against using the ureter if it is less than 1.5 cm in diameter [4].

Ureterocystoplasty is thus ideal for patients with appropriately enlarged ureters, usually due to reflux, who require bladder augmentation. The procedure has the advantage that it can be performed via an extraperitoneal approach as in our case which also avoids interference with the ventriculo-peritoneal shunt.

References

- [1] Barry Belman A, King Lowell R, Stephen Alan Kramer, editors. *Clinical Pediatric Urology*. Taylor and Francis; 2002. p. 481.
- [2] Dewan PA, Anderson P. Ureterocystoplasty: the latest developments. *BJU International* 2001;88:744–51.
- [3] Zubieta R, de Badiola F, Escala JM, Castellan M, Puigdevall JC, Ramírez K, et al. Clinical and urodynamic evaluation after ureterocystoplasty with different amounts of tissue. *Journal of Urology* 1999 Sep;162(3 Pt 2):1129–32.
- [4] Husmann DA, Snodgrass WT, Koyle MA, Furness 3rd PD, Kropp BP, Cheng EY, et al. Ureterocystoplasty: indications for a successful augmentation. *Journal of Urology* 2004;171:376–80.
- [5] Chaim JB, Partin AW, Jeffs RD. Ureteral bladder augmentation using the lower pole ureter of a duplicated system. *Urology* 1996;47:135–7.