Bilateral ureteric re-implant for an 18 months old boy with a huge bilateral hutch diverticulum presented with recurrent urinary retention

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**ABSTRACT**

Huge bladder diverticulum is uncommon but serious cause of obstructive uropathy in children. This study investigated an 18 months old boy with a huge bilateral Hutch diverticulum presented with recurrent urinary retention, underwent bilateral bladder diverticulectomy. The operative management entailed meticulous reconstruction of the lower urinary tract. Post operatively the patient restored normal voiding dynamics, and he is on regular follow up. We are reporting this case due to its rarity and to share our experience with the management and outcome in such cases.

**Introduction**

Bladder diverticulae are classified to be pseudodiverticulae, which occur as a result of mucosal herniation within an area of weakness in the bladder wall. It can be subdivided into congenital, iatrogenic or acquired. Huge bladder diverticulae are rare and most commonly associated with young boys. They are associated with urinary retention and urinary tract infections (UTI). Bladder outlet obstruction is usually caused by posterior urethral valve or neurogenic bladder in young boys. However, bladder diverticulae rarely can cause bladder outlet obstruction. We present a case of huge bilateral bladder diverticulae in a baby boy which presented as urinary retention.

**Case presentation**

An 18 months old full term boy presented with sudden onset of acute urinary retention (AUR). The patient had normal prenatal renal ultrasound and was delivered with normal spontaneous vaginal delivery. A trial of voiding failed and retention was only relieved by indwelling Foley catheter. Ultrasound showed severe bilateral hydronephrosis more in left side measuring 2.2 cm in diameter with mild bilateral renal pelvic dilatation and preserved corticomedullary differentiation.

Subsequently, a micturating cystourethrogram (MCUG) demonstrated a (huge) bilateral hutch diverticulum, no vesicoureteric reflux and unremarkable male urethra (Fig. 1). Urine analysis was positive for bacteria (enterococcus faecalis). Complete blood count showed a white blood cell count of 19.41 × 10^9 with predominant lymphocytes 57.9% indicating chronic unresolved UTI. After UTI treatment, the patient underwent cystoscopy, bilateral bladder diverticulectomy and bilateral ureteric re-implant. Intra operatively, both ureteric orifices were located in the diverticulum. Extra vesical bilateral ureteric re-implant “modified Lich-Gregoir technique” with a 3 cm detrusor tunnel was done at the posterior lateral aspect of bladder wall bilaterally with insertion of double J ureteric stents (Fig. 2). Although with mild risk of temporary urinary retention, the inability to identify both ureteric orifices within the bilateral huge diverticulums cystoscopically promote the need for extravesical dissection of diverticulum, which provides less dissection around ureterovesical junction, less hematuria/dysuria and rapid recovery with less bladder opening. Patient tolerated the procedure with no immediate complications and discharged two days later after removing the Foley catheter. Ureteric stents removed 6 weeks post operatively. At two month follow up, the patient was voiding freely 4–5 times/day with no recurrence of UTI since operation. Ultrasound showed unremarkable urinary bladder and insignificant post void

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volume of 3.4 ml, distal ureters were not visualized and no hydronephrosis bilaterally (Fig. 3).

**Discussion**

A MEDLINE/PubMed database search from 1970 to 2018 with the keywords ‘hutch diverticulum’, ‘paraureteral diverticulum’, ‘congenital bladder diverticulum (CBD)’ and ‘AUR’ showed a total 55 patients with CBD presenting with AUR. Bladder diverticula found in 1.7% of the children. The presence of more than one diverticulum on a side usually associated with neurogenic dysfunction of the bladder, bladder outlet obstruction, or syndromes such as Williams, Menkes, prune-belly, or Ehlers-Danlos type 9 syndromes. Etiology of CBD is controversial, as some authors support the theory of transient intrauterine bladder outlet obstruction secondary to urethral angulation, a Cowper’s gland cyst or posterior urethral membrane, whereas others support the embryological theory of defective incorporation of the mesonephric duct into the bladder at the site of ureter hiatus as the cause of Hutch diverticulum. Though CBD are often asymptomatic, their sequelae commonly include reflux, UTI, stone formation, and urinary incontinence. AUR is an unusual and rare presentation of CBD most commonly observed in male children. Bladder diverticula causing outlet obstruction/retention in young children are rare and constitute one of the unusual indications for bladder diverticulectomy in children. Extravesical reimplant found to be technically straightforward, avoiding intravesical dissection and associated morbidity of bladder spasm, while achieving functional outcomes, and can be done in association with paraureteral huge diverticulum excision.

![Fig. 1. Micturating cystourethrogram showing a huge bilateral huch diverticulum, no ureteric reflux and unremarkable male urethra.](image1)

![Fig. 2. Intraoperative: bilateral diverticulectomy with bilateral extra-vesical ureteral reimplantation.](image2)

![Fig. 3. Ultrasound pre operatively (A) showed severe bilateral hydroureter more in left side compared to post operatively (B) Resolution of hydroureters and unremarkable bladder.](image3)
Conclusion

Bladder diverticulae is a rare condition commonly associated with male children. The baby usually presenting with recurrent UTI or urine retention. Bladder diverticulectomy combined with (extravesical) ureteral re-implantation is a feasible and effective surgery to improve voiding dynamics.

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