Technical Innovation

Access this article online
Website: www.afrjpaedsurg.org
DOI: 10.4103/0189-6725.79072
Quick Response Code:

Novel bladder augmentation in a bilateral single system vaginal ectopia

Uday Sankar Chatterjee, Subir K. Chatterjee

ABSTRACT

A 3-month-old girl presented with total urinary incontinence along with small bladder and bilateral single-system vaginal ectopic ureters [BSSVEU]. Bladder augmentation was done with dilated ureters (ureterocystoplasty) based on proximal blood supply of the ureters.

Key words: Bilateral single vaginal ectopia, bladder augmentation, ectopic ureters, incontinence, ureterocystoplasty

INTRODUCTION

An ectopic ureter opens at a site other than the posteriolateral aspect of trigone and it also may open outside the urinary system.[1] Ectopia is usually associated with duplex kidney and in general, 80% of ectopic ureters arise from the upper pole of a completely duplicated system.[2,3] If an ectopic ureter drains a single kidney, it is called a singlesystem ectopic ureter (SSEU).[4] Singlesystem ectopic ureters are rarely occurring only in 20% of the ureteric ectopia.[5]

Embryologically, cranial origin of the ureteric bud from the mesonephric duct causes SSEU. This limits the migration of mesenchymes necessary for the formation of bladder neck.[6] Very rarely, ureters are misplaced and drain into Gartner's ducts. Owing to distention with urine, the thin epithelial lining of the Gartner's ducts will rupture and the ducts will communicate with the genital system forming extra urinary bilateral singlesystem vaginal ectopic ureters (BSSVEU).[7]

We are presenting a rare case of BSSVEU in which the patient became continent by bladder augmentation alone.

CASE REPORT

A 3-month-old girl presented with recurrent urinary tract infection and continuous dribbling without normal voiding. On clinical examination, all three orifices in the perineum were present. Blood picture was normal except for a higher creatinine level (1.4 mg/dl). Ultrasonography (USG) showed bilateral hydroureteronephrosis; the right kidney was almost cystic. Dilated left ureter was about 12 mm and right one was 10 mm. Intravenous urography (IVU) showed a functioning left hydronephrotic kidney but could not delineate the ureters and right kidney. Cystogram showed a small bladder without any reflux.

On endoscopy, ureteric orifices could not be seen either in the bladder or in the vagina. Both bladder and vagina were catheterized for 24 h and urine came out only from the vagina.

Two days later, exploration of the hypogastrium through a Pfannenstiel incision was done and the small bladder was identified by passing a urethral boogie. Dilated ureters were traced and found to be entering the vaginal fornices with narrow terminal ends [Figure 1]. They were transected and their vaginal ends closed. About 5 cm of the terminal portion of both the ureters were spatulated on their medial borders or less vascular area [Figure 2]. The spatulated portions of both ureters were anastomosed side to side, similar to the uretero-ureterostomy described by Wallace.[8] This side-to-side uretero-ureterostomy at the terminal ends after spatulation resembled a "double-bodied cobra head"; the two dilated ureters were the "double-body" [Figure 3]. The bladder was then bivalved from the neck anteriorly to the back posteriorly. The "cobra-head"

Dept. of Pediatric Surgery, 356/3, S.K. Bose Sarani, Kolkata 700 030, Park Medical Research and Welfare Society, 4, Gorky Terrace, Kolkata 17, India

Address for correspondence:
Dr. Uday Chatterjee,
356/3, S. K. Bose Sarani, Kolkata 700 030, India.
E-mail: udaysankarchatterjee@yahoo.com

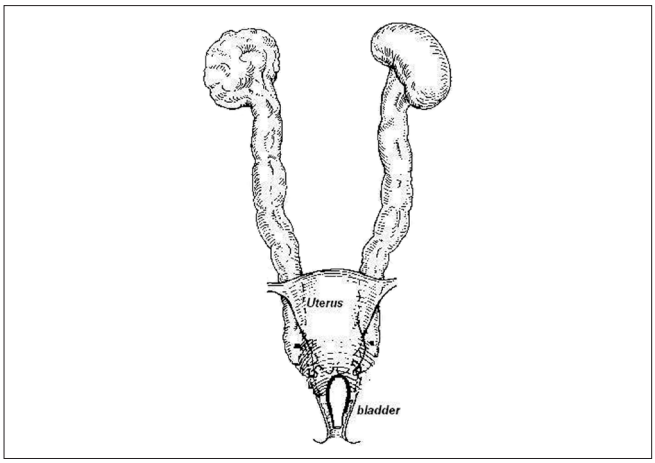


Figure 1: Dilated ureters entered the vaginal fornices with stenosed terminal ends.

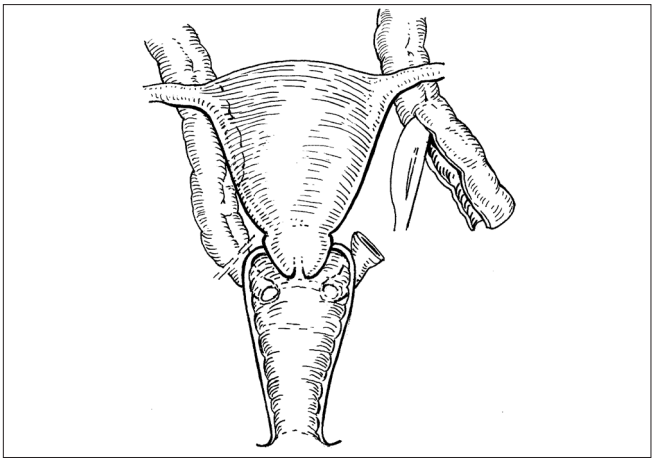


Figure 2: Both ureters were transected at the terminal ends and were spatulated on their medial borders in a less vascular area.

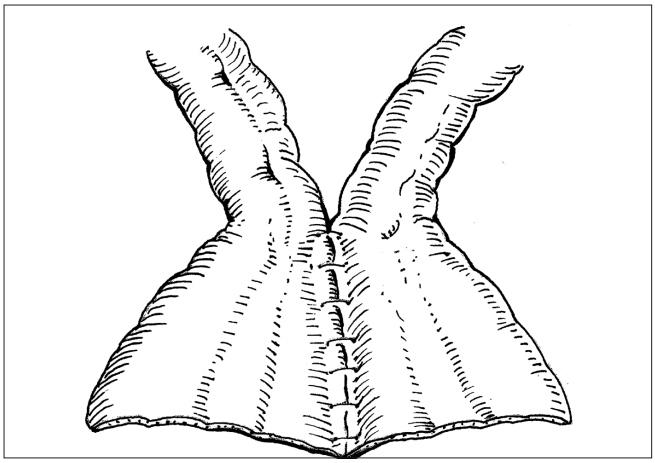


Figure 3: Side-to-side terminal uretero-ureterostomy at the spatulated ends.

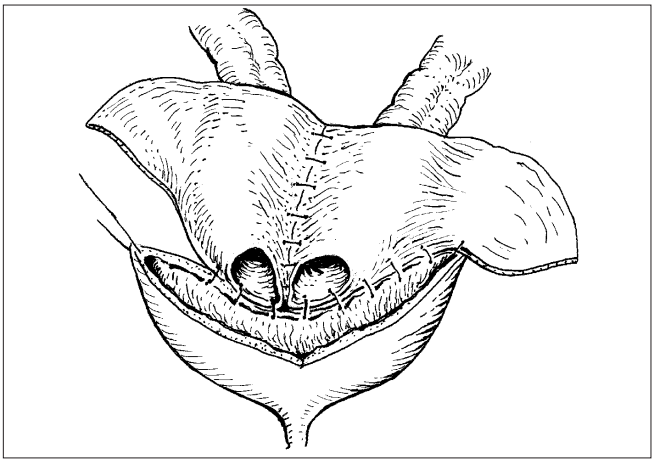


Figure 4: Terminally anastomosed ureters were reanastomosed to the bivalved bladder for augmentation.



Figure 5: Cystogram showed satisfactory bladder capacity, grade 5 bilateral reflux; the closed bladder neck was above the symphysis pubis

was then reanastomosed to the bivalved bladder for augmentation [Figure 4]. This resulted in increasing the bladder capacity to about 10 ml. The wound was closed leaving a catheter in the bladder.

Recovery was uneventful and the catheter was removed after 10 days. The patient started voiding and the voided volume gradually increased to 55 ml in 6 months (as shown by voiding diary). She had no dribbling but had mild stress incontinence. She was on prophylactic cotrimoxazole because of the obvious reflux.

At the age of 9 months, cystogram showed satisfactory bladder capacity, grade 5 bilateral reflux; the closed bladder neck was above the symphysis pubis [Figure 5] and there was stress incontinence McGuire (1993) type 0,[9] without any residual urine.

DTPA-isotope study revealed no function on the right side, GFR on the left side was 38.5 ml/min.

DISCUSSION

Bilateral vaginal ectopic ureters are the rarest variety of ureteral ectopia. In reviewing relevant literatures,

we have found intravesical BSSEU,[10,11] unilateral single-system vaginal ectopic ureter (USSEU),[1] but not bilateral single-system vaginal ectopic ureters (BSSVEU).

URO-MR is preferred instead of an IVU in ectopic ureter, particularly in unilateral one but in a small child anesthesia may be necessary. In the index patient, 24-h catheterization in vagina and bladder confirmed the diagnosis.

At the outset, we planned for bilateral terminal ureterostomies to assess the recoverability of kidney function, but after nephrological and anesthetic consultation, we decided to this type of one-stage reconstructive surgery. Bladder augmentation with ureters is a preferred choice due to similarity of epithelium, but is not often possible. Considering the age of the patient, type of megaureter (nonrefluxing) and nature of ultimate reconstruction (refluxing hence more compliant), along with the simplicity of the reconstruction, ureterocystoplasty was preferred over enterocystoplasty.

In this patient, bladder augmentation was indicated as the initial capacity was around 5 cc.

Bladder augmentation with ureters is usually done depending on distal blood supply from the superior vesical arteries.[12] But this was obviously not possible in this case as the ureters lost their distal blood supply after dissecting them out from the vaginal fornices.

In bladder augmentation with ureters, the capacity increases to about seven times in a year and in this patient the bladder reached about 55 ml of capacity from 10 ml in 6 months. Ureterocystoplasty, selected properly, has been found to be a preferred procedure in maintaining the bladder and renal function in long-term follow-up.[13,14]

According to Heuser *et al.*,[15] in bilateral ectopia the bladder neck may not be defined but in this patient, it was found after 6 months of augmentation.

The patient was continent and she was passing urine normally maintaining a dry-period of more than 4 h excepting for mild stress incontinence which was not bothering the parents. Reimplantation without augmentation is not desirable, as according to Heuser *et al.*,[15] incontinence is reinforced by the low bladder capacity. Similarly, Brueziere[16] also advocates bladder augmentation and bladder neck reconstruction for the attainment of continence.

In the index patient, bladder neck above the symphysis in cystogram along with stress incontinence signifies isolated internal sphincteric deficiency (ISD) without perineal neural or muscular deficit.

We preferred renogram after 8 weeks of relieving the obstruction rather than in an obstructed system which may mislead in making the decision. In the index patient, nephrectomy may be done in future along with other procedures and in that situation, residual ureter may be a donor for further augmentation if necessary.

We reserved the bladder neck reconstruction and other procedures if necessary for another day.

REFERENCES

1. Gangopadhyaya AN, Upadhyaya VD, Pandey A, Gupta DK, Gopal SC, Sharma SP, *et al*. Single system ectopic ureter in females: A single center study. J Indian Assoc Pediatr Surg 2007;12:202-5.
2. Blane CE, Ritchey ML, DiPietro MA, Sumida R, Bloom DA. Single system ectopic ureters and ureteroceles associated with dysplastic kidneys. Pediatr Radiol 1992;27:491-6.
3. Ahmed S, Barker A. Single system ectopic ureters: A review of 12 cases. J Paediatr Surg 1992;27:491-6.
4. Chowdhary SK, Lander A, Parashar K, Corkery JJ. Single-system ectopic ureter; a 15 – year review. Pediatr Surg Int 2001;17:638-41.
5. McSynder H. Anomalies of the ureters. In: Gillenwater JY, Howards SS, Duckett JW, editors. Adult and pediatric urology. St. Louis: Mosby year book; 1991. p. 1831-62.
6. Redman JF, Lightfoot ML, Reddy PP. Bilateral single system ectopia in a boy. Urology 2002;60:514.
7. Schlussel RN, Retik AB. In: Walsh PC, Retik AB, Vaughan ED, Wein AJ, editors. Campbell's urology. Philadelphia: WB Saunders; 1998. P. 1821.
8. Wallace DM. Uretero-ileostomy. Br J Urol 1970;42:529-34.
9. Blaivas JG, Romanazi LJ, Heritz DM. In: Walsh PC, Retik AB, Vaughan ED, Wein AJ, editors. Campbell's Urology. Philadelphia: WB Saunders; 1998. P. 1013.
10. Kumar A, Goyal NK, Trivedi S, Dwivedi US, Singh PB. Bilateral single ureteral ectopic ureters: Case report with literature review. Afr J Paediatr Surg 2008;05:99-101.
11. Jayanthi VR, Churchill BM, Khoury AE, McLorie GA. Bilateral single ureteral ectopla: Difficulty attaining continence using standard bladder neck repair. J Urol 1997;158:1933-6.
12. Rink RC, Adams MC. In: Walsh PC, Retik AB, Vaughan ED, Wein AJ, editors. Campbell'surology. Philadelphia: WB Saunders; 1998. P. 3182-3.
13. Husmann DA, Snodgrass WT, Koyle MA, Furness PD, Kropp BP, Cheng EY, *et al*. Uretero-cystoplasty: Indications for a successful augmentation. J Urol 2004;171:376.
14. Johal NS, Hamid R, Aslam Z, Carr B, Cuckow PM, Duffy PG. Ureterocystoplasty: Long-Term Functional Results. J Urol 2008;179:2373-6.
15. Heuser M, Zöller G, Seseke F, Zappel H, Ringert RH. *et al*, Bladder dysfunction in children with bilateral ectopic ureters. J Paediatr Surg 2002;37:E15.
16. Brueziere J. Incontinence of urine of sphinteric origin in the female child. Eur Urol 1976;2:113-9.

Cite this article as: Chatterjee US, Chatterjee SK. Novel bladder augmentation in a bilateral single system vaginal ectopia. Afr J Paediatr Surg 2011;8:109-11.

Source of Support: Nil, **Conflict of Interest:** None declared.