Pediatric Case Reports

Complete Bladder Duplication by a Transversal Septum With Pelvic Ectopic Kidney: A Case Report

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Bladder duplication is an unusual and congenital abnormality that is usually associated with other abnormalities. We reported the first case in a 16-year-old child who has complete bladder duplication by a tranversal septum. No duplication of the urethra was noted. The pelvic ectopic right kidney was associated with this duplication. The treatment was a right nephroureterectomy with upper bladder bag resection. UROLOGY 88: 183–185, 2016. © 2016 Elsevier Inc.

Bladder duplication is a rare congenital malformation. It is often associated with other abnormalities and may be complete or incomplete. In the case of complete duplication, the abnormality is often associated with duplicity of the urethra or the external genitalia.[1] Here, we reported a rare case of complete bladder duplication by a transversal septum with a pelvic ectopic right kidney.

CLINICAL OBSERVATION

A 16-year-old child was admitted to the emergency department for acute abdominal pain without a dysuria. The anamnesis noticed an intermittent abdominal pain with recurrent urinary tract infection since he was 7 years old.

He experienced a 39°C fever, a hypogastric painful mass, dull to percussion, and a distended bladder that persisted despite the easy catheterization, which has drained clear urine (Fig. 1). The external genitalia were of masculine type and normal without a urethral duplicity.

Emergency ultrasound showed a right ectopic kidney with 2 hypogastric masses that contained urine and lithiasis for the lower bladder. A computed imaging revealed a pelvic ectopic right kidney with hydronephrosis. The following imaging showed bladder duplication with 2 stackable pockets separated by a transversal thick wall (Fig. 2). The upper pocket named bladder N°1 communicates with the right ectopic kidney by a divided but short and enlarged obstructed ureter beyond the renal pelvis. The second portion of this ureter goes down and has a normal course until it ends within the lower bladder. The etiology of the distended upper bladder was a stone of the right ureter 2 cm from the ureterovesical junction. This explains why the upper bladder receives urine flow only from the right kidney by the divided short ureter. The long portion is obstructed by a stone. The lower bladder must receive urine flow from both ureters, but the right one is obstructed by

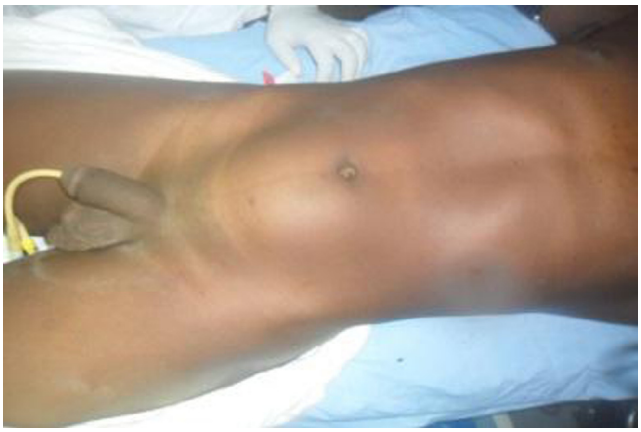

Figure 1. Distended bladder. (Color version available online.)

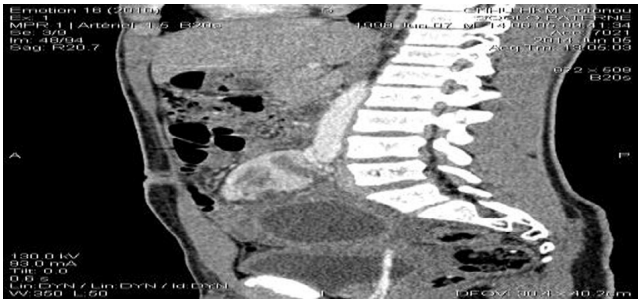

Figure 2. Right pelvic kidney + both bladder pockets stackable.

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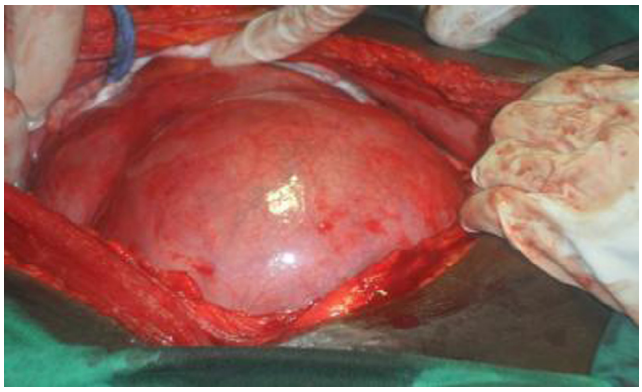

Figure 3. Bladder distension of the upper cavity + right pelvic kidney. (Color version available online.)

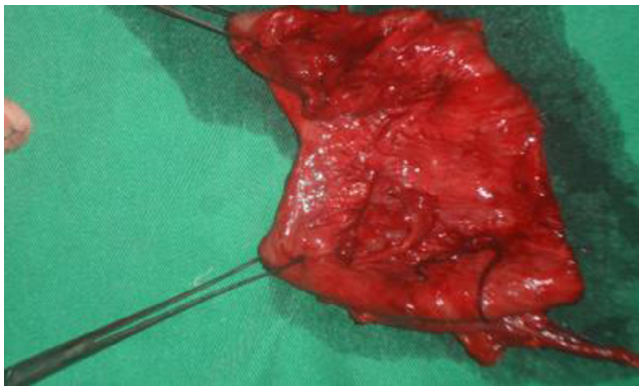

Figure 4. Resected piece of the upper bladder. (Color version available online.)

a stone so that urine flow is given by the left kidney. The left kidney has a normal position and communicates with the lower pocket of the bladder.

Biological screening shows creatinine level was 6 mg/L, hemoglobin was 14 g/dL, and white blood cell count was 16 G/L. Urine culture identified *Escherichia coli* sensible to cephalosporins and aminoglycosides.

Diagnosis of bladder duplication with pelvic ectopic right kidney complicated by urinary tract infection was suspected.

The patient had both antibiotherapy and suitable exploratory laparotomy (Fig. 3). A right nephroureterectomy and an upper bladder bag resection have been performed (Fig. 4).

The postoperative course was uneventful with creatinine level at 7 mg/L; normal diuresis was 1500 cc.

Pathological examination of the resected upper pocket anatomopathological screening (Fig. 4) has concluded to the presence of bladder tissue with chronic cystitis signs.

DISCUSSION

Bladder duplication can be complete or incomplete. In incomplete duplication, the 2 bladder pockets communicate mostly through a hole created by an incomplete septum.[2]

In complete bladder duplication, there are 2 pockets that do not communicate. The septum can be on the sagittal plane with 2 hourglasses. In this case, the abnormality is part of a more complex of the caudal pole of the embryon, affecting the midline structures; the upper urinary tract is usually normal.[3,4] In boys, the penile is usually the site of a bifidity or a diphallia more or less complete, although cases of single penile with both urethra have been reported by Singh et al[5] and Quiroz-Guerrero et al.[6] The scrotum is usually bifid or duplicated, marked by a deep groove and testis, or cryptorchidism or uni- or bilateral agenesis.

The complete bladder duplication can also be done with a front septum. In this case, there is often a urethral duplicity with abnormalities of the upper urinary tract[2] or other abnormalities. However, cases of bladder duplication and urethral duplication with front septum without associated abnormalities have been reported by Pirinççi et al[7] and Karpathakis et al.[8] The present case is the first case of complete bladder duplication with transversal septum. Taneja and Singh[9] reported a case of bladder duplication with an incomplete and transversal septum in a 52-year-old patient with no other defects. The malformation associated in this case was a pelvic ectopic right kidney. Although the right kidney should be functional, it had a communication with the upper bladder with a free but divided and curved ureter. The hydronephrosis is due to a ureter stone. In complete bladder duplication, both pockets can be functional and can each receive a ureter ended by a clean urethra.[7] Only one of the pockets can be functional and receive both ureters or only one. The other pocket is blind and/or associated with a nonfunctional kidney.[2]

In the case reported, there is a right ureteral duplication with a stone obstruction of the long portion. The upper bladder communicates with this ureter. The second branch of the duplicated ureter communicates with the lower pocket of the bladder. Communication between the 2 bags does not take place through the septum as in the case of incomplete septum or in the case of hourglass bladder.

The origin of the different types of bladder duplication has poorly been understood. It would be due to a localized thickness of the detrusor in the form of a circular and horizontal ring dividing the bladder into 2 unequal stackable cavities and communicating through an orifice whose size depends on the degree of muscle hypertrophy.[1] The ureters enter the bladder always at the same level, mostly on the lower level.[10]

The usual symptoms that were reported were symptoms related to abnormalities with bladder duplication.[7] In this case, the main complaints were fever and abdominal pain. These complaints are related to acute pyelonephritis and urinary tract obstruction due to pelvic ectopic kidney and lithiasis.

So, we performed a right nephroureterectomy with upper bladder bag resection. This treatment was motivated by the recurrence of lithiasis, pyelonephritis, and other mechanical complications. In Metzger et al[2] case's, the

treatment was motivated by pyelonephritis and mechanical complications.

CONCLUSION

Bladder duplications are rare congenital malformations. Bladder duplications can be complete or incomplete, with a sagittal septum or frontal or transversal but exceptionally.

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