

Extravesical Approach in Paraureteral Bladder Diverticulum A Case Report

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ABSTRACT

Bladder diverticula are herniations of bladder mucosa through fibres of the detrusor muscle. We present the extravesical approach to a case of paraureteral bladder diverticulum in a six-year old boy who had a history of recurrent urinary infection. In case of recurrent urinary complaints, the possibility of presence of a bladder diverticulum should be kept in mind. Voiding cystourethrogram is helpful for the differential diagnosis of the bladder diverticulum. Excision by extravesical approach of the paraureteral bladder diverticulum is a good choice.

Keywords: Child, extravesical approach, paraureteral diverticula, vesicoureteral reflux

Abordaje Extravesical en el Divertículo Vesical Paraureteral Un Reporte de Caso

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RESUMEN

Los divertículos vesicales son hernias de la mucosa de la vejiga a través de las fibras del músculo detrusor. Presentamos un enfoque extravesical frente a un caso de divertículo vesical paraureteral en un niño de seis años de edad, con antecedentes de infección urinaria recurrente. En el caso de problemas urinarios recurrentes, debe tenerse en cuenta la posibilidad de la presencia de un divertículo de la vejiga. Un cistouretrograma de micción es útil para el diagnóstico diferencial del divertículo de la vejiga. La extirpación mediante el abordaje extravesical del divertículo vesical es una buena opción.

Palabras claves: Niño, abordaje extravesical, divertículos paraureterales, reflujo vesicoureteral

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INTRODUCTION

Bladder diverticula are herniations of bladder mucosa between fibres of the detrusor muscle. Paraureteral diverticula are congenital bladder diverticula, which are located at or adjacent to the ureteral hiatus where Waldeyer's sheath normally seals the potential space between the intravesical ureter and bladder muscle (1). Although in some children, bladder diverticula have no functional consequences, in others they can produce bladder outlet obstruction, vesicoureteral reflux (VUR), ureteral obstruction or predispose to urinary tract infections. Surgery is recommended in patients who have VUR with paraureteral diverticula, because it is believed that the reflux secondary to the diverticulum is not

resolved spontaneously. Diverticulum-tomy with ureteral reimplantation has been successfully done to repair the bladder wall and eradicate reflux (2). Thus, we present an extravesical approach in a case of paraureteral bladder diverticulum in a six-year old boy who had a history of recurrent urinary infection.

CASE REPORT

A six-year old boy attended our hospital with recurrent urinary tract infections. Clinical history revealed frequent urinary tract infection that has not responded to antibiotic treatment and circumcision. Physical examination was normal. Laboratory investigations included renal function tests, urinalysis and complete blood count which were all normal. Ultrasonography revealed bladder wall thickening, a diverticular cystic mass located on the posterolateral wall of the bladder and 50 cc postvoiding residual urine. On voiding cystourethrogram (VCUG), left paraureteral diverticula and ipsilateral grade IV VUR were found (Fig. 1). Dimer-

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Fig. 1: Voiding cystourethrography shows left paraureteral diverticula with ipsilateral grade IV vesicoureteral reflux.

captosuccinic acid (DMSA) renal scintigraphy revealed 80% function on the right and 20% function on the left kidney. Cystoscopy showed a large opening about the location of the left ureteral orifice which suggested a diverticulum (Fig. 2).

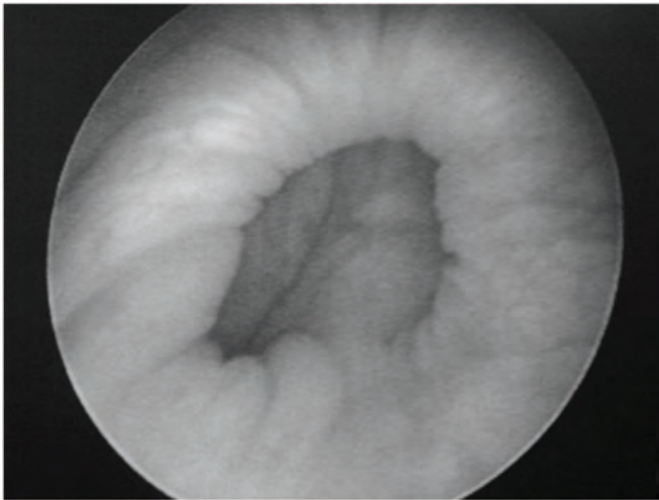


Fig. 2: Cystoscopy shows a large opening about the location of the left ureteral orifice which suggests a diverticulum.

However, the ureteral orifice could not be seen either in the intravesical or intradiverticular region. At exploration, the ureteral opening was found at the top of the diverticulum. At operation, diverticulectomy, double-J ureteric stent insertion, tapering of the distal ureter, and detrusorrhaphy were carried out in the same session using the extravesical approach (Figs. 3, 4). The postoperative course was uneventful. In the postoperative second month, the double-J stent was removed by cystoscopy. Cystoscopy showed no diverticulum in the bladder and the endoscopic view of the

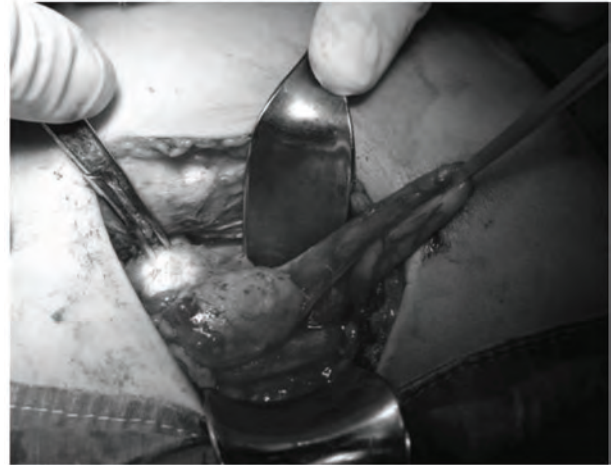


Fig. 3: At exploration, the ureteral opening was found at the top of the diverticulum.

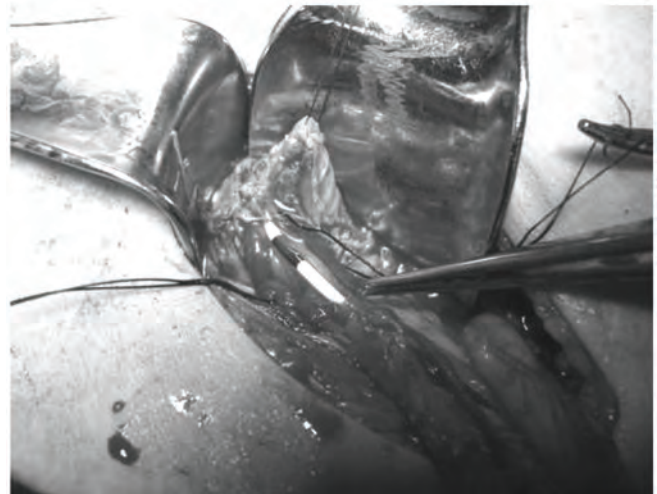


Fig. 4: Dissected, stented and tapered ureter.

left ureteral orifice was normal. During the first year, he was asymptomatic.

DISCUSSION

Bladder diverticula may be acquired or congenital. Acquired diverticula are usually multiple. They are the result of bladder outlet obstruction due to anatomic or neuropathic reasons. Rarely, bladder diverticula are acquired iatrogenically. Congenital bladder diverticula most often are solitary. They are usually located in the lateral cornu of the trigone and the ureteral hiatus. The cause is believed to be an inherent weakness in the detrusor musculature, in particular, deficiencies of the Waldeyer fascial sheath (3). Congenital diverticula occur more commonly in children with disturbances of connective tissue formation or muscularization of the urinary tract, such as prune-belly, Menkes, Williams' Elfin-Facies, and Ehlers-Danlos syndromes, and cutis laxa. Paraureteral or Hutch diverticula are congenital bladder diverticula that occur as hiatal and perihial herniations at or adjacent to the ureteral hiatus (1).

Bladder diverticula are uncommon in children. Blane *et al* (4) reported a 1.7% incidence of bladder diverticulum in their paediatric urology database. Paraureteral diverticula may cause VUR, bladder outlet obstruction, ureteral obstruction or urinary tract infections. Cerwinka *et al* (1) diagnosed paraureteral diverticula in 2.3% of children with urinary tract infections in their series. Diverticula can be detected by ultrasonography. Voiding cystourethrogram is the best modality for identifying bladder diverticula. Intravenous pyelograms are not sensitive in detecting paraureteral diverticula. We evaluated the patient for recurrent urinary tract infections by ultrasonography and VCUG.

The cystographic appearance of paraureteral diverticula is similar to a ureterocoele eversion. Distinguishing paraureteral diverticula with VUR from ureterocoele eversion with reflux in complete ureteral duplications is important (5). Surgical approach to a paraureteral diverticulum differs from ureterocoele eversion. Ureterocoele eversion has been described as intussusception of the ureterocoele into its own ureter (6). If ipsilateral lower pole reflux is seen on VCUG, the lower pole ureter appears to enter the diverticulum; it has been suggested that this appearance results from superposition of the refluxing ureter and the intussuscepting ureterocoele (5). Paraureteral diverticula could be confirmed by cystoscopy. The relation between the ureteral orifice and mouth of the diverticulum could be recognized and the size of the diverticulum could be evaluated during endoscopy. In the index patient, the diverticulum was visualized preoperatively by cystoscopy and the diagnosis confirmed.

Treatment of paraureteral diverticula is dictated by the sizes of the diverticula and associated features of the patients. In the patients who have VUR, the presence of paraureteral diverticula does not affect the resolution rate of reflux (7). Observation is a valuable alternative to surgery especially for young and asymptomatic patients. The patients who have large diverticula and recurrent urinary tract infections are candidates for surgical treatment. Surgical treatment of paraureteral diverticula consists of diverticulectomy and bladder closure. Usually, ureteric reimplantation is required with diverticulectomy, because reflux is generally present.

The extravesical detrusorrhaphy is an effective method for the surgical treatment of primary VUR in children (8). Megaureter could be tapered by the intravesical or extravesical approach (9). The small sized diverticula may be

repaired with the nondismembered method similar to the antireflux surgery for primary VUR, without excision. If excision is required, the dismembered method may be used (10). Generally, the postoperative periods for patients who undergo extravesical surgery are comfortable. In our patients, we prefer the dismembered technique for partial excision of the diverticulum. Haematuria was minimal and bladder spasm did not exist after extravesical diverticulectomy and detrusorrhaphy in the index patient.

In summary, we presented a case of a paraureteral diverticulum in a child who had a history of recurrent urinary tract infection. In cases of recurrent urinary tract infections, the possibility of the presence of a bladder diverticulum should be kept in mind. Voiding cystourethrogram is helpful in making the diagnosis of bladder diverticula. We believe that the extravesical approach is a safe, effective and simple method in the treatment of paraureteral bladder diverticula with vesicoureteral reflux in children.

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