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RESEARCH-ARTICLE

Adult bilateral non-obstructing orthotopic ureteroceles with multiple calculi: endoscopic management with review of literature

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Abstract We describe and report two cases of bilateral symptomatic ureterocele with calculi in two young adult women. They were successfully managed endoscopically by a transverse meatotomy and stone extraction done bilaterally in a single operative session. The 6th month postoperative voiding cystourethrogram showed no reflux. The literature regarding the incidence, occurrence, diagnosis and management of this uncommon condition in adults has been reviewed and discussed.

Keywords Ureterocele · Orthotopic ureteroceles · Ureteral calculi · Iatrogenic vesicoureteral reflux

Introduction

Adult orthotopic bilateral ureteroceles with calculi is an uncommon and well tolerated, relatively rare clinical entity. It is often easily diagnosed; endoscopic meatotomy is usually successful in total stone clearance and in simultaneously ablating the ureterocele without any serious long-term sequel.

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Report

Case-1. A thirty-year-old adult women presented with complaints of dysuria, flank pain and colics for the last two years. The urine analysis and culture revealed symptomatic bacteriuria suggestive of a urinary tract infection. X-ray KUB suggested bilateral lower ureteric calculi measuring about 1×2 cms (Fig. 1a). Her renal function tests were within normal limits. Urine 24 h sampling and blood analysis failed to reveal any metabolic abnormalities Lower abdominal ultrasounds scan suggested bilateral cystic space occupying lesions in the bladder with internal hyper-echogenic signals (Fig. 1b) suggestive of ureteroceles. An excretory urogram showed the typical bilateral adder head deformity (Fig. 2a) containing calculi that confirmed the diagnosis. Cystopanendoscopy confirmed two bilateral orthotopic 3×2 cms ureteroceles in an otherwise normal urinary bladder.

Case 2. A 38 year old married women presented with repeated episodes of severe painful episodes of flank colics for the last one year. Upon investigation she was detected to be having culture positive urinary tract infection and 2×2 cms bilateral ectopic ureteroceles with

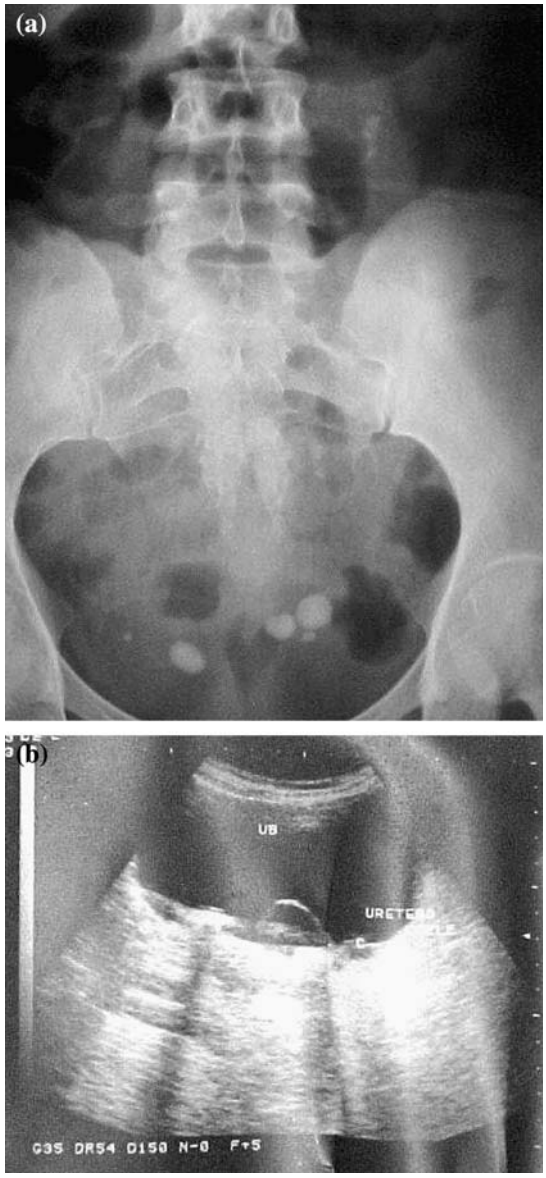

Fig 1 X-ray KUB showing the bilateral radiopaque densities suggestive of lower multiple ureteral calculi (**a**) and the ultrasound showing bilateral intravesical orthotopic ureteroceles (**b**)

small solitary calculi. There were no metabolic abnormalities and the renal function tests were within normal limits.

Results

Both the cases underwent successful bilateral horizontal endoscopic meatotomy with transurethral extraction of all the stones at a single operative session under spinal anesthesia. The mean operative time was one hour and the post op X-ray KUB (Fig. 2b) confirmed total stone clearance. Both the patients were discharged the next day. A voiding cystourethrogram performed in the third month showed no reflux (1st case), there was successful resolution of urinary sepsis and back pain by the sixth month. In the 2nd case the third month voiding cystourethrogram showed mild grade-2 vesicouretral reflux that subsided over the next three months with conservative management. Quantitative stone analyses by Fourier's transform infrared spectroscopy revealed: 80% calcium oxalate monohydrate and 20% calcium oxalate dihydrate composition in both the cases.

Discussion

Ureterocele is a cystic dilatation of the terminal ureter due to a congenital weakness in the lower ureteric wall often accompanied by distal ureteric stenosis [1]. Ureteroceles occurring in normal ureteric (intravesical) locations are called as simple or orthotopic ureteroceles (seen in the adults) as opposed to the heterotopic ureterocele that generally accompany an ectopic ureteric orifice or an ectopic-duplex renal system (seen in the pediatric age group) [2].

While ureteroceles occur more commonly in women, stones in ureteroceles tend to be more common in men [3]; both the present two cases were encountered in young adult women. The overall incidence of stones in ureteroceles varies from 4 to 39% these are generally solitary [4]. An adult ureterocele presentation with calculi in the women as in the present two cases is uncommon [5]. As in the case of children such cases are usually diagnosed in the adults during an investigation for urinary sepsis, dysuria, voiding difficulty, flank colics or hematuria. Stones frequently complicate adult ureteroceles; it is believed that this may be due to associated ureteral atony with urinary stasis that may contribute to urolithiasis [5].

The diagnosis is generally straight forward and the only other similar condition needing differentiation is the pseudoureterocele (secondary to obstructive lesions: bladder tumors,

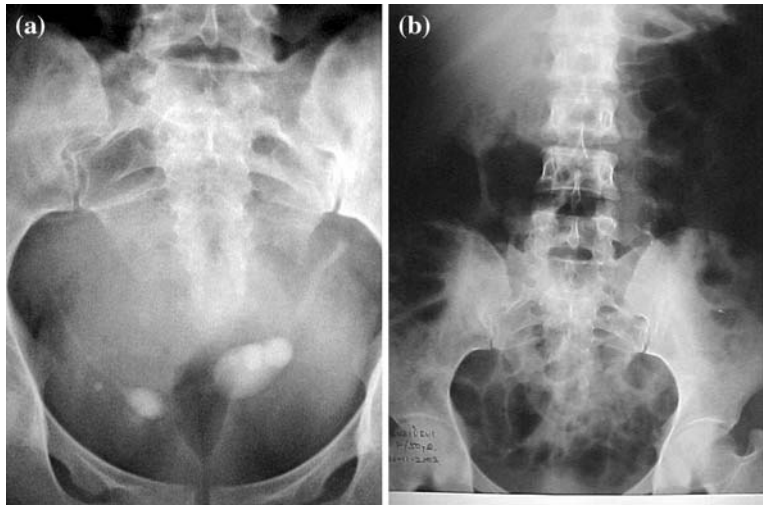

Fig. 2 An excretory urogram showing the typical adder head deformity suggestive of bilateral ureteroceles containing calculi (**a**), and the post op X-ray KUB showing complete stone clearance (**b**)

stones in the ureteral meatus, tuberculosis of the bladder), certain differentiating radiological signs include asymmetrical dilatation of the terminal ureter and a thick halo surrounding the dilatation [6].

Indications for surgical intervention in a ureterocele include: (i) symptomatic ureteroceles with recurrent urinary tract infections and flank colics, (ii) obstructive ureteroceles on a renal scan with evidence of deteriorating renal function, (iii) stones complicating ureteroceles, and (iv) symptomatic heterotopic ureteroceles in duplex renal units. Most ureteroceles can be safely managed transurethrally endoscopically which is generally well tolerated by most patients. The suitable indications for a successful endoscopic intervention include: (i) small to moderately sized ureteroceles and (ii) healthy ureteral wall with minimal atony so as to minimize reflux. The risk of post operative reflux is usually low if a transverse horizontal (smiling mouth) incision is used, since the overhanging hood acts as a fall back valve to diminish the occurrence of later vesicoureteral reflux [7, 8]. Recently holmium laser has also emerged as a viable alternative to treat adult ureteroceles with calculi [9].

We reported the present two cases to highlight that (i) bilateral orthotopic ureteroceles presenting in the adults are uncommon, (ii) they can be complicated by multiple ureteric calculi, (iii) endoscopic surgery is justified when stones occur in such small-moderately sized ureteroceles, (iv) that stones in ureteroceles can also occur in women and these may be multiple at times, and (v) to apprize the treating surgeon and urologist of such cases. Orthotopic ureteroceles with calculi are uncommonly encountered in the adult population. Though also more commonly seen in children they may present late in life with symptoms due to urosepsis or stones. Endoscopic management with a transverse meatotomy is the gold standard therapy to prevent vesicoureteral reflux. Bilateral orthotopic ureteroceles with bilateral multiple calculi in the adult population is an uncommon entity that should be correctly recognized and managed in the least invasive manner.

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