Evaluation of the Initial Treatment of Ureteroceles

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OBJECTIVE To assess the results of the initial therapeutic approach to ureteroceles at our institution and the need for further interventions.

PATIENTS AND METHODS This is a retrospective study of all pediatric cases of ureterocele diagnosed at our center between January 2000 and December 2011.

RESULTS Forty-three patients were analyzed. Initial diagnoses were ureterohydronephrosis in 34 (33 prenatal), febrile urinary tract infection in 5, and prolapsed ureterocele in 3. Expectant management was decided upon in 6 patients (14%). Of these, 1 required surgery. The remaining 37 (86%) initially underwent surgery: transurethral puncture (18), heminephrectomy (14), nephrectomy (3), and reimplantation (2). Twelve (66.6%) of the 18 patients who underwent primary puncture progressed well and required no further intervention. New-onset vesicoureteral reflux to the upper pole appeared after puncture in 3 patients, but none required treatment. Only 6 patients (33.3%) underwent a second procedure. Mean follow-up was 8.5 years (standard deviation: 3.08).

CONCLUSION Early endoscopic puncture is useful for decompression and often the definitive treatment. Although new-onset vesicoureteral reflux into the punctured system is the most common complication, it often resolves spontaneously. Early heminephrectomy in patients with nonfunctioning upper moieties yields excellent results but may not be necessary. Some patients may not need transurethral puncture or any surgical intervention at all. UROLOGY 89: 113–117, 2016. © 2016 Elsevier Inc.

The pediatric ureterocele is perhaps the most challenging condition for a pediatric urologist.[1-6] The treatment of this rare malformation remains a matter of debate. Historically, aggressive treatments were the rule to prevent renal damage secondary to infections.[2,7] However, treatment prospects and objectives have changed since the advent of prenatal diagnosis. Doubts have recently arisen as to whether early diagnosis leads to unnecessary interventions.[6]

Only treatment goals have not changed. Preventing renal damage and urinary tract infection (UTI) and promoting continence remain the basic aims of treatment.[1-5,8] The present aim is to achieve these results, with the fewest possible interventions, to prevent complications.

Transurethral puncture (TUP) has become a popular, safe, and minimally invasive procedure.[2,4,8-10] However, concern exists regarding new-onset reflux after puncture and the frequent need for subsequent interventions.[11,12] In recent years, conservative management of asymptomatic patients without obstruction has shown that these patients remain free of symptoms, hydronephrosis tends to resolve as ureterocele collapses, and vesicoureteral reflux (VUR) tends to resolve spontaneously. Cystic dysplastic kidneys associated with ureteroceles are, in the main, managed conservatively since the majority involute, and leaving them in situ is not associated with a higher incidence of complications.[6,7,13] Although procedures such as upper pole partial nephrectomy (UPPN) or reimplantation are safe and associated with a low percentage of complications, they may not always be necessary.[8]

The aim of this study was to analyze the outcomes of our historical series and, in view of our results and a review of the recent literature, propose a new treatment strategy based on a less aggressive approach because it appears that with more conservative management, the same functional results can be achieved.

PATIENTS AND METHODS

A retrospective study was conducted of children diagnosed of ureterocele treated at our institution between January 2000 and December 2011. The review focused on the initial treatment and its results, and the outcome of interest was the need for subsequent interventions.

History of prenatal diagnosis, age at presentation, initial symptoms, preoperative and postoperative VUR as well as

Financial Disclosure: *The authors declare that they have no relevant financial interests.*

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Submitted: October 12, 2015, accepted (with revisions): November 18, 2015

new-onset VUR, incidence of postoperative UTI, and imaging studies were collected for all patients. The initial treatment and its outcomes and the need for further interventions were recorded. Continence status was assessed during follow-up at the outpatient pediatric urology clinic. Patients with a follow-up of less than 1 year were excluded.

Once the diagnosis of ureterocele was established, prophylactic antibiotics were administered and basic imaging studies including ultrasound, voiding cystourethrogram (VCUG), and renal dimercaptosuccinic acid scintigraphy were performed to assess renal function. The upper pole of a duplex kidney or a solitary kidney was considered nonfunctional when its contribution to the overall renal function was less than 10%. Obstruction was considered in cases of severe hydroureteronephrosis that suggested poor drainage of the upper pole or kidney. Diuretic renography to assess upper pole/kidney was historically not performed at our center, although at present it is considered routine.

Our initial therapeutic protocol is shown in Figure 1. Patients without symptoms or obstruction were managed nonsurgically. In patients with obstruction (severe hydronephrosis) or symptoms, the chosen procedure was based on function of the upper pole: generally, TUP was performed when there was a functioning upper pole; in contrast, UPPN was performed when the upper pole was nonfunctioning. Neither the type of ureterocele (considered as intravesical or ectopic according to the description at the time of cystoscopy) nor the presence of reflux at the time of diagnosis influenced the choice of the therapeutic procedure. Routine cystoscopy to confirm the diagnosis of ureterocele was not performed prior to intervention.

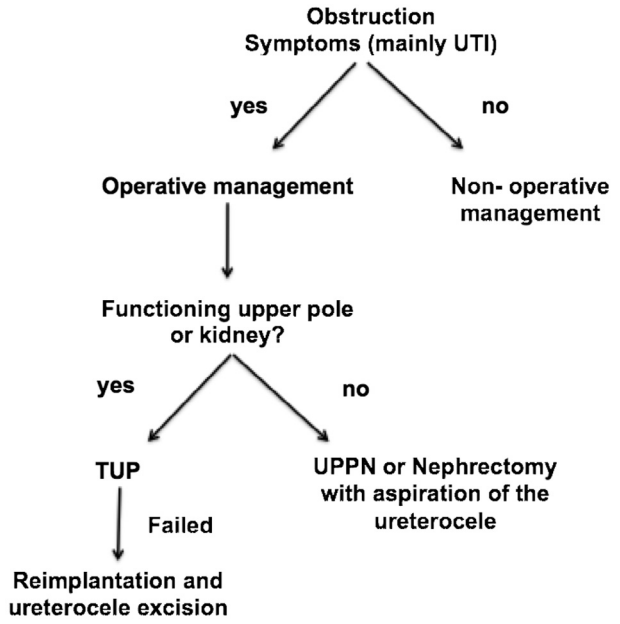

Figure 1. Initial therapeutic protocol. TUP, transurethral puncture; UPPN, upper pole partial nephrectomy; UTI, urinary tract infection.

TUP was performed at the medial base of the ureterocele with minimal installation of irrigation to keep the ureterocele distended. Puncture was performed through a 9.5-mm ureterocystoscope with a 4 French monopolar electro catheter. We did not perform incisions to avoid VUR. A urethral catheter was left in place for 24 hours in all punctured patients, after which they were discharged. All UPPN were performed open fashion via lumbotomy, except for one that was done laparoscopically. Reimplantations were transtrigonal, in Cohen fashion, and associated with ureterocele excision.

After primary surgery, patients were followed up by ultrasound at 3 months and every 6 months thereafter until 2 years postsurgery. After 2 years, in the absence of complications, follow-up was made biannually until the patient was >16 years of age. After TUP and reimplantation, a VCUG was additionally performed 6 months postsurgery to assess VUR. Follow-up in patients managed nonsurgically was made by ultrasound at 3, 6, 12, and 24 months after diagnosis. In the absence of complications, ultrasound was then performed biannually. All routine appointments were to the pediatric urologist.

Prophylactic antibiotics were withdrawn if the upper tract dilatation resolved, with no evidence of high-grade reflux after surgery. In patients managed conservatively, prophylactic antibiotics were administered according to our VUR protocol.

Secondary procedures were considered in patients in whom neither surgical nor endoscopic decompression was achieved or symptoms (mainly infections) appeared after the initial management. TUP failure was considered in patients without adequate decompression on ultrasound (persistent hydronephrosis) or with complete ureterocele recurrence.

RESULTS

Forty-three children (19 boys, 24 girls) were diagnosed with ureterocele and treated at our center between 2000 and 2011. Patient characteristics and preoperative imaging studies are shown in Table 1. Renal scintigraphy was not available in 8 patients in whom puncture was performed early for decompression owing to severe hydronephrosis. None of the patients had upper pole reflux. VUR status was unknown in 2 patients.

Initial Management (Table 2)

Nonoperative management was decided upon in 6 patients because they were asymptomatic and no upper tract obstruction was present. Four patients had duplicated kidneys and 2 solitary kidneys. In 3 patients with duplicated kidneys and 1 with a solitary kidney, the upper pole/kidney contributed less than 10% to overall renal function. The remaining 2 patients had a normally functioning upper pole and kidney, respectively. Only 2 had low-grade VUR to the lower pole.

Surgical treatment was decided upon in the remaining 37 patients. Mean age at first intervention was 5.2 months