Endourologic Treatment in Two Cases of Ureteral Valves

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Abstract

Introduction: Congenital ureteral valves are a rare cause of ureteral obstruction that may lead to renal function deterioration. We present two clinical cases treated endoscopically by monopolar electrocautery and laser fiber ablation.

Presentation of Case: The first case is a 13-year-old male with several episodes of abdominal pain and was found to have severe left hydronephrosis. Ultrasonography showed a dilated ureter and pelvicaliceal system with an obstructive renogram curve. We performed a retrograde pyelogram, finding a dilated ureter 5 cm up from the vesicoureteral junction with ureteral valves in that place. Ablation of the valves was conducted using monopolar electrocautery. The second case is a 2-year-old male with left ureterohydronephrosis shown in abdominal ultrasonography. In the radiologic findings, a high-risk pyelocaliceal dilatation with renal parenchyma thinning and a diameter of 3.3 cm for the left ureter is described, with an obstructive renogram. We performed a cystoscopy, observing the presence of valves in the ureter at 3 cm that conditioned an obstruction. The complete section of the valves was performed through a 270 μ m holmium laser fiber. Our patients made an uneventful postoperative recovery and continue to remain completely asymptomatic. A significant decrease in renal dilation was observed and renal function recovered in both cases.

Conclusion: Ureteral valves are an uncommon cause of ureteral obstruction. Advances in endourologic techniques allow us to give a minimally invasive approach to these diseases, obtaining good long-term results in our small series of patients.

Keywords: ureteral valves, retrograde pyelography, endoscopic resection

Introduction

URETER VALVES ARE A RARE CAUSE of ureteral obstruction. Its embryologic origin is not clear and it is thought that they may be due to the persistence of folds in the ureteral membrane together with the presence of abundant smooth muscle fibers in the pathologic analysis.

Although different classifications of pathologic character have been described depending on the location of smooth muscle fibers,¹ our study is aimed at describing their clinical and radiologic presentation, as well as their minimally invasive treatment by endoscopic resection on two clinical cases.

Presentation of Case

Two clinical cases are presented:

Case 1

The case is a 13-year-old male with several episodes of abdominal pain and severe left hydronephrosis. Ultra-

sonography showed a medium dilated ureter (3 cm in diameter) and a pyelocaliceal system with high-degree dilation.

In turn, it showed an obstructive curve for the elimination of contrast in the preoperative renogram with loss of renal function (38%) (Fig. 1).

With the suspicion of obstructive megaureter, a diagnostic cystoscopy was performed using a compact 9.5 cystoscope, which showed a normal left ureteral meatus. A retrograde pyelogram was performed wherein a dilated ureter was observed 5 cm from the vesicoureteral junction (Fig. 2). A 5 mm balloon was passed over a 0.035 hydrophilic guide through the ureterovesical junction to allow the passage of the ureterorenoscope. Ureteroscopy was performed, which showed the presence of a ureteral valve at the site of the ureteral caliber modification that had been observed in retrograde pyelography. Ablation of the valves was performed by monopolar electrocautery (30 W) and a Double-J stent was placed that was maintained for 4 weeks.

FIG. 1. Obstructive renogram and loss of function in both cases.

Case 2

This case is a 2-year-old male with a history of hypertrophic pyloric stenosis and intervened Morgagni hernia, with casual diagnosis of ureterohydronephrosis in abdominal ultrasonography. In the radiologic findings, a high-risk pyelocaliceal dilation with renal parenchyma thinning and a diameter of 3 cm for the left ureter is described.

The child was asymptomatic without urinary infections and without antibiotic prophylaxis.

A renogram showed an obstruction in the removal of contrast in the left ureter along with a 33% function of that kidney.

On suspicion of primary obstructive megaureter, it was decided to perform surgery to resolve it endoscopically.

Cystoscopy was carried out using a compact 9.5 cystoscope, where orthotopic meatus with a normal-looking bladder was observed, with a good passage of the cystoscope through the left meatus, observing the presence of valves in the ureter at 3 cm that conditioned an obstruction.

Through a 270 μ m holmium laser fiber (1.5 J power and 8 Hz frequency), the complete section of the valves was performed, allowing the correct observation of the rest of the ureter after resection.

Double-J 3F 8–12 cm catheter was left externalized with thread, which was lost a few hours after the intervention.

The evolution was favorable in both cases, the surgery time was 30 minutes in the first case and 25 in the second, with a low operating room occupancy.

Discharge occurred <24 hours after the procedure in both patients.

The ureteral catheters were left in place. In the first case it was removed 1 month after surgery and in the second case it was lost on the same day of the intervention.

Hospital stay was 24 hours for the first patient and 8 hours for the second.

Pain control was satisfactory in both cases and there were no infectious complications.

Ultrasonography measurements showed clear improvement, observing a complete disappearance of ureteral dilation (Fig. 3).

Likewise, an improvement was observed in the contrast elimination curve in the renogram as well as in renal function.

The follow-up was 8 years for the first patient and 1 year for the second, with no recurrence in either case.

Discussion and Literature Review

Ureter valves were first described in 1877 by Wolfier. Depending on the pathologic examination, different types of ureteral valves are established depending on the location of the smooth muscle fibers. However, endoscopic diagnosis

FIG. 2. Ureteral valves and endoscopic resection.

FIG. 3. Ultrasonography improvement of ureteral and pyelocaliceal dilation.

makes it difficult to obtain an anatomopathologic sample and, therefore, microscopic examination is not a necessary condition for diagnosis.²

Different forms of presentation for the ureter valves have been described, in some cases they are associated with other genitourinary anomalies, such as complete or incomplete renal duplication, vesicoureteral reflux, renal agenesis, and obstruction of the pyeloureteral junction,³ and in other cases they are described as isolated cases in the literature.

Its location in the ureter has been described as 50% in the proximal part, 17% in the middle third, and 33% in the distal third.

Prenatal diagnosis is increasingly frequent and, therefore, it is increasingly rare for these patients to reach adulthood undiagnosed, although some cases have been documented in the literature. There is no preference for sex and most are unilateral, although cases of bilateral ureter valves with anuria at birth have also been published.

Initial diagnosis is not easy and is similar to that of the primary obstructive megaureter, because in both cases a ureterohydronephrosis associated with an obstruction in the elimination of contrast in the renogram can be observed.

However, in our experience and reviewing radiology, an abrupt stop image can be observed in the dilated ureter

FIG. 4. (A) Ureterovesical junction. (B) Imprint of the ureter valves with prevalvular dilation.

(Fig. 4) without observing an image of the retrotrigonal ureter on ultrasonography. They are radiologic findings that may suggest the presence of valves in the ureter.

With the suggestive ultrasonography findings and the obstructive renogram, we can have a diagnosis of high suspicion of ureter valves or ureter stenosis.

Regarding treatment, different therapeutic approaches have been described, such as surgical resection of the ureteral valves and reimplantation in some cases. Likewise, endoscopic treatment has also been described as an effective approach to this pathology analysis, both electrocautery and holmium laser resection.⁴

In our case, resection of the ureter valves is performed on the lateral or anterior side of the ureter because the posterior and medial level of the middle third of the ureter cross the iliac vessels and we must avoid cutting in that area to avoid vascular injury.

In our experience, we consider that on the one hand, endoscopic treatment is a good surgical alternative in these cases because the aggression is small and the results are satisfactory in the long term. Although we believe that electrocautery is effective for valve resection, the use of holmium laser allows for an accurate calculation of the energy used, avoiding adding morbidity to these procedures.

The risk of recurrence is low, the follow-up should be carried out with ultrasonography control at 3, 6, and 12 months the first year and then annually. From 6 months after the intervention, a renogram should be performed to demonstrate the resolution of the obstruction.

Conclusion

Ureteral valves are an uncommon cause of ureteral obstruction. Retrograde pyelography with ureteroscopy remains the gold standard for diagnosis. Advances in endourologic techniques allow us to give a minimally invasive approach to these diseases, obtaining good long-term results in our small series of patients.

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