Internal Urethrotomy Combined With Antegrade Flexible Cystoscopy for Management of Obliterative Urethral Stricture

Seyed Jalil Hosseini, Ali Kaviani, Ali Reza Vazirnia

Introduction: We studied the safety and efficacy of flexible cystoscopy-guided internal urethrotomy in the management of obliterative urethral strictures.

Materials and Methods: Forty-three flexible cystoscopy-guided internal urethrotomies were performed between 1999 and 2005. The indication for the procedure was nearly blinded bulbar or membranous urethral strictures not longer than 1 cm that would not allow passage of guide wire. Candidates were those who refused or were unable to undergo urtheroplasty. By monitoring any impression of the urethrotome on the monitor through the flexible cystoscope, we were able to do under-vision urethrotomy. All of the patients were started clean intermittent catheterization afterwards which was tapered over the following 6 months. Follow-up continued for 24 months after the last internal urethrotomy.

Results: Seventeen patients were younger than 65 years with a history of failed posterior urethroplasty, and 26 were older than 65 with poor cardiopulmonary conditions who had bulbar urethral stricture following straddle or iatrogenic injuries. Urethral stricture stabilized in 16 patients (37.2%) with a single session of urethrotomy and in 17 (39.5%) with 2 urethrotomies. Overall, urethral stricture stabilized in 76.7% of patients with 1 or 2 internal urethrotomies within 24 months of follow-up. No severe complication was reported.

Conclusion: Flexible cystoscopy-guided internal urethrotomy is a simple, safe, and under-vision procedure in obliterative urethral strictures shorter than 1 cm. It can be an ideal option for patients who do not accept posterior urethroplasty or are in a poor cardiopulmonary condition that precludes general anesthesia.

Keywords: urethral injuries, urethral stricture, male, cystoscopy, treatment outcome

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INTRODUCTION

Traumatic and iatrogenic obliterative urethral strictures shorter than 1 centimeter constitute a significant number of diagnoses among patients with urethral stricture. Conventionally, their repair is done through a perineal approach. There are some groups of patients, however, who do not consent to undergo urethroplasty or are in very poor cardiac or pulmonary conditions that preclude general or spinal anesthesia. *Cut-to-the-light* technique has been used by Leonard and colleagues[1] as a less-invasive procedure, but Turner-Warwick and others have

disputed this procedure because of its blind nature and high complication rates.[2,3] We are reporting our experience with flexible cystoscope to guide retrograde internal urethrotomy as an alternative method to the cut-to-the-light procedure in selected patients.

MATERIALS AND METHODS

We reviewed flexible cystoscopy-guided internal urethrotomies we had performed between 1999 and 2005. This technique would be used in patients who had denied primary or secondary urethroplasty or had been in a very poor cardiac or pulmonary condition precluding general or spinal anesthesia. Our planned indication for the procedure was nearly blinded bulbar or membranous urethral strictures not longer than 1 cm shown on simultaneous voiding cystourethrography and retrograde urethrography (Figure 1) that did not allow passage of guide wire. In case of a positive history of transurethral resection of the prostate (TURP) or open prostatectomy, our inclusion criteria would be intact external urethral sphincter and appropriate distance of the external urethral sphincter from the bulbar urethral stricture, documented by antegrade flexible cystoscopy. We excluded patients with membranous urethral stricture who had a history of TURP or open prostatectomy.

All of the patients had a suprapubic catheter because of obliterative urethral stricture and their inability to void. The procedure was done electively. A flexible cystoscope was introduced through a mature cystostomy tract to the posterior urethra up to the nearly blinded point. The bladder, bladder neck, and prostatic urethra were examined, and in cases of bulbar urethral stricture, the external urethral sphincter and the distance of the stricture from the sphincter were evaluated. Then, the urethrotome was passed retrogradely through the urethra to the stricture point (Figure 2). Monitoring any impression of urethrotome on the monitor through the flexible cystoscope, we were able to do under-vision urethrotomy in our patients. After providing a wide open urethra that allows easily introduction of a 21-F resectoscope to the bladder, a 18-F urethral catheter was placed.

The urethral catheter was left in place for 7 days. Thereafter, clean intermittent catheterization (CIC) by the patient was started with 18-F urethral catheters. The CIC regime was planned to be tapered over a 6-month period. The patients were instructed for performing CIC, and the probable complications or problems were described. The follow-up visits were planned as monthly clinical visits for 12 months, and then, every 3 months for a maximum of 24 months. All of the patients were followed up for 24 months after their last urethrotomy. Retrograde

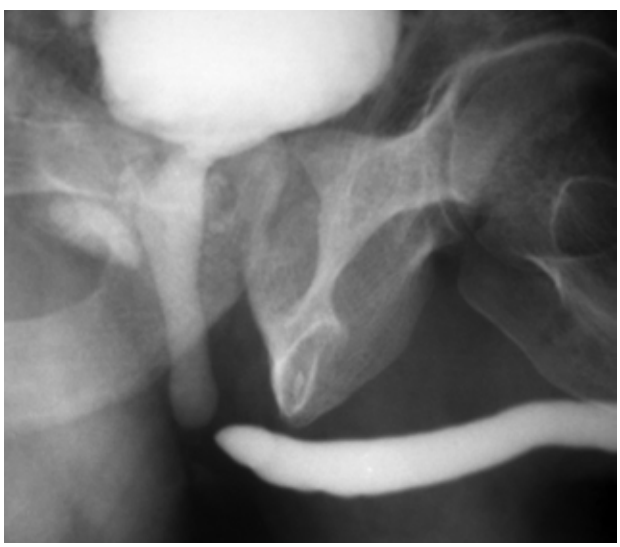

Figure 1. Simultaneous voiding cystourethrography and retrograde urethrography in a patient with obliterative urethral stricture.

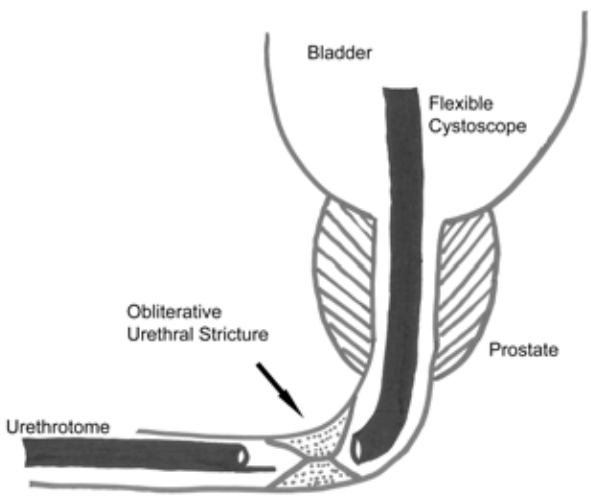

Figure 2. Schematic view of a flexible cystoscopy-guided internal urethrotomy procedure.

urethrography was done 6 and 12 months postoperatively, and urethrocystoscopy was done 6, 12, and 24 months, postoperatively. Semi-urgent urethrocystoscopy was done in patients who had any difficulty in voiding or had any problem in passing the urethral catheter.

Our indication for additional urethrotomies was stricture recurrence shown on retrograde urethrography and confirmed by urethrocystoscopy. We defined urethral stricture stabilization for our patients as remaining without stricture recurrence for 24 months after the last urethrotomy. The patients were observed for any complications. Severe complications considered as the following: severe bleeding that needed packing or any other intervention and rectal injury or a newly built false passage in the urethra determined at end of the operation by physical examination and antegrade or retrograde cystoscopy.

RESULTS

A total of 43 patients underwent flexible cystoscopy-guided internal urethrotomy at our center. Their mean age was 55.2 years (range, 20 to 81 years). Seventeen patients (39.5%) were younger than 65 years and had stricture recurrence following posterior urethroplasty done for pelvic fracture urethral distraction. All of them denied repeat urethroplasty. The remaining 26 patients (60.5%) were older than 65 years with bulbar stricture disease. Twelve of them had a history of TURP and 5, a history of open prostatectomy. The external urethral sphincter was intact and away from the stricture site in all of these patients. Straddle injury and catheterization trauma were the cause of disease in 2 and 7 patients, respectively. All of the 26 patients older than 65 years had severe cardiac or pulmonary disease and as a result were not able to undergo general or spinal anesthesia. Local anesthesia was used in all of the patients together with intravenous administration of sedative drugs.

Urethral stricture stabilized in 16 patients (37.2%) with a single session of urethrotomy and 17 (39.5%) underwent 2 urethrotomies to achieve stabilization. Overall, urethral stricture stabilized in 76.7% of patients with 1 or 2 internal urethrotomies within 24 months of follow-up. All second internal urethrotomies in these patients were done during the first 12 months after the first internal urethrotomy, and 12 (70.6%) of them were during the first 3 months. Ten patients (23.3%) had several recurrences and needed multiple repeat internal urethrotomies, of whom 7 were younger than 65 years old. The patients did not experience any severe complications.

DISCUSSION

Traumatic and iatrogenic obliterative urethral strictures shorter than 1 centimeter constitute a significant number of urethral strictures. Visual internal urethrotomy has been used for management of short (usually less than 1 cm) urethral strictures.[4-6] Some authors believe that the most cost-effective strategy for the management of short bulbar urethral strictures is to reserve urethroplasty for patients in whom a single endoscopic attempt fails.[7] However, if the guide wire cannot be passed, this procedure cannot be done safely.

Classically the repair of obliterative urethral strictures has been performed using perineal urethroplasty. In 1990, Leonard and colleagues believed that cut-to-the-light technique could be performed easily and carried a very low morbidity rate.[1] On the other hand, cut-to-the-light technique has been condemned by some other authors because of the blind nature of the procedure and also the high complication rates.[2,3,8] Dogra and colleagues believe that core through urethrotomy with contact neodymium-doped yttrium aluminum garnet laser seems to be a safe and effective treatment option for selected strictures.[9] In their experience, the urethrotomy was guided by metal sound introduced through the suprapubic tract. Thomas and associates believe that using a laser fiber as a guide wire can be a viable and effective option for gaining access through strictures when alternative methods fail.[10] Nonetheless, there is no consensus on any of the above techniques and obliterative urethral stricture is still a challenge for the urologist.

Flexible cystoscope has been widely used for early realignment after pelvic fracture urethral distraction.[3] Also, flexible cystoscopy-guided

valve ablation has been reported by some authors.[11,12] Although there are different papers regarding the use of flexible cystoscopy for early realignment and valve ablation, there is not much information regarding its use during internal urethrotomy. In fact, it is also completely different from the somehow old-fashioned cut-to-the-light technique, because it does not have the disadvantage of blind context in the former procedures. In other words, flexible cystoscopy-guided internal urethrotomy helps to perform an under-vision urethrotomy in obliterative urethral strictures shorter than 1 cm in patients who do not consent to urethroplasty or are in very poor cardiac or pulmonary conditions and as a result, are not able to stand general or spinal anesthesia. The principal surgeon can check the impression caused by the urethrotome on the monitor, while performing internal urethrotomy, so that creating false passage can be avoided.

We had a good experience in flexible cystoscopy-guided urethrotomy. We would stop the procedure if we could not see the impression of the uretrotome antegradely in order to avoid blind urethrotomy. Its advantage over cut-to-the-light method is that one can monitor the procedure from both sides and avoid creating a false passage. Its advantage over putting antegrade urethral sound as a guide for internal urethrotomy is again the visual access of the surgical team to what is happening in the posterior site of the blinded urethra. Our study bears no contradiction to Thomas and colleagues' study[10] and can be used when in such procedures, the laser fiber cannot be passed. In fact, this technique lets us perform a safe internal urethrotomy in suitable candidates and help us to avoid the serous complications related to the cut-to-the-light procedure.

CONCLUSION

Flexible cystoscopy-guided internal urethrotomy is a simple, safe, and under-vision procedure for the treatment of obliterative urethral strictures shorter than 1 cm in patients who refuse to or cannot undergo posterior urethroplasty.

CONFLICT OF INTEREST

None declared.

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