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Excision and primary anastomotic urethroplasty

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***Abstract*---**Objective: To retrospectively review patients with strictures (<3 cm) of the bulbous urethra who had Undergone urethroplasty with excision of the stenotic segment and end-to-end anastomosis. Patients and Methods: One hundred patients were analyzed, all males with ages ranging from 18 to 60 who were treated for strictures between 5 and 30 mm in length between 2007 and 2021. Endoscopic internal urethrotomy was used in the treatment of 65 patients (%), and three patients (20()) had internal urethrotomy performed on them twice. The removal & primary anastomotic urethroplasty were performed on all patients. With the patient in a lithotomy posture, the stenotic segment was removed and the stumps spatulated for end-to-end anastomosis through a perineal incision. The average (range) time of an operation was 119 (75-150) minutes. Although one patient underwent revision surgery for a perineal urine fistula, the surgery itself and the time spent in the position of lithotomy were both uneventful. Results: After a median of 12 months of observation, 95% of patients were deemed cured since the stricture had not returned. Perineal urinary fistula and recurring stricture occurred in one case. No other adverse events

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occurred as a result of the treatment. Conclusion: Cure rates for short bulbous urethral strictures are close to 100% after end-to-end anastomosis.

***Keywords*---**endoscopic internal, urethroplasty, urethrotomy.

Introduction

When deciding on a course of treatment for a urethral stricture, it is important to take into account the severity and location of the obstruction. There are a wide variety of surgical options, but no one method is perfect for every situation. Direct visual internal urethrotomy has been the therapy of decision for anterior urethral strictures for many years [1]. It is simple, can be repeated, and causes minimal discomfort to the patient because it is performed endoscopically without incision, and the patient can return to work within a couple of days. This has resulted in the preference during the past two decades for treating bulbous strictures of less than 3 cm by first removing the stenotic section and then performing primary anastomosis. The bulbous urethra serves as a great location for this method since it allows for wide range of motion and has good blood flow. However, when the stricture is single and relatively short (1 cm), the pendulous urethra can be repaired by excision and primary anastomotic urethroplasty. In these circumstances, surgery should be performed with caution to avoid shortening the urethra to the point where a 'ring' forms, as this can cause ventral chordee to rupture the penis. Since the stricture can be eliminated with compromising and through a tension-free end-to-end anastomosis the longer it is the more proximal it is. Therefore, removal of the stenotic portion and primary anastomosis is the preferred treatment for bulbous urethra strictures, with a 90-100% success rate for well selected patients [2]. Here, we take a look back at the patients we've treated using this strategy thus far.

Patients and Methods

This study analyzed data from a retrospective chart review of 100 patients who underwent end-to-end urethroplasty for anterior urethral strictures between 2007 and 2021. All patients were male (mean age 32.6) and had strictures ranging in length from 10mm to 30mm. A total of 65 patients (%) had previously been treated with endoscopic internal urethrotomy, and 20 patients (%) had undergone internal urethrotomy twice.

Table 1. The causes /site of urethral strictures, and outcome after end-to-end urethroplasty

Variable	No. (%)
Cause	
Infection	75
Trauma	25
Site	
Distal Bulbous urethra	65
Proximal Bulbous	25
Outcomes	
Cured	92
Optical internal urethotomy Repeat urethroplasty	06 02

In order to determine the severity of the spongiofibrosis and the length of the stricture before surgery, all patients underwent a comprehensive evaluation that included a thorough medical history and physical examination, imaging tests (antegrade and retero-grade urethrography), and cystoscopy if urethrography was unable to provide the exact picture. The stenotic segment was removed with the stumps were spatulated for end-to-end anastomosis through perineal access with the patient in the increased lithotomy position. Over a 16 Fr silicone catheter, we utilized six to eight distal sutures to approximate the mucosa to each other, and we used chromic catgut 3/0 to strengthen the pars spongiosa.The average (range) time of an operation was 119 (75-150) minutes. In particular, no difficulties arose from the extended time spent in the extended lithotomy posture [3].One patient with recurring stricture and perineal urine fistula was permanently cured after undergoing redo- urethroplasty. After four weeks, a pericatheter urethrography was performed to remove the urethral catheter. Patients were seen again at 2- and 3-month intervals for uroflowmetry and 6-month intervals for retrograde cysto-urethrography. Patients were regarded as cured if they had no postoperative obstructive complaints, a maximum urine flow of 15 mL/s on flowmetry, and no evidence of recurrent stenosis on cysto-urethrography. There was a 12-month follow-up.

Results

Twenty people were tracked down for clinic visits. Ninety-two of them (92%) were cured; one patient had recurrent stenosis with a perineal urinary fistula, so they performed a urethrotomy 3 months later. They then recommended the patient practice clean self-intermittent catheterization (CSIC), but the patient developed stricture again due to noncompliance.

Discussion

Since it is a simple treatment with low risk of complications, endoscopic urethrotomy has become standard practice. Since urologists typically opt for the least complicated and intrusive approach, this has led in an ongoing discussion concerning the optimal way to manage urethral strictures [4].Patients, after being counseled, often opt for this less intrusive surgery. Concerns concerning the procedure's efficacy have been raised, however, because of the vast discrepancy in reported results (Table 2) [5-10,14].

Table 2. Previous results of internal urethrotomy for strictures and of primary anastomosis for anterior urethral strictures

Study (follow-up, months)	No. of patients	Success, n (%)
[5] (25)	128	109 (85)
[6] (18)	143	121 (85)
[7] (70.7)	64	23 (36)
[8] (12)	15	12 (80)
[9] (12)	38	4 (11)
[14] (12)	70	24 (34)
[10] (39)	269	200 (75)
Primary anastomosis, anterior urethral strictures		
[2]	37	35 (95)
[12]	13	12
[15]	60	56 (93)
[16]	95	87 (92)
[17]	20	19 (95)
Present	66	56 (93)

Although various groups have reported cure rates of 80-95% with end-to-end anastomosis [12], in 1983 Chilton et al.[11] cured just 5% of 261 individuals endoscopically for urethral stenosis. In 1993, Mundy [13] pointed out that urethrotomy and/or dilatation were still the mainstays of care for urethral strictures, and he argued that urethroplasty played merely a supporting role, being advised only for patients with especially difficult strictures, or for whom other therapies had failed. The only published long-term outcomes of urethrotomy in a large cohort are those reported by Pansadoro and Emiliozzi [1]. The overall rate of recurrence was 68% in their sample of 224 patients who were followed for an average of eight years after urethrotomy.

Only 34% of our patients are considered permanently healed after undergoing one or more internal urethrotomies [14]. According to Jakse and Marberger [15], two internal urethrotomies might be performed on a short stricture before resorting to urethroplasty. According to the data, urethrotomy may have some success in treating patients with basic short strictures, but reiterating the procedure does not improve the outcome; instead, it improves the degree of peri-urethral fibrosis which renders afterwards urethroplasty more difficult, thus lowering the quality of care [1].

In carefully selected patients (Table 2), stricture excision with primary anastomosis has a near-100 percent success rate in achieving a cure. Stricture must be 3 cm in length and located in the bulbous urethra; indications must be apparent, and patients must be carefully chosen to meet these requirements. Strictures that are longer or located in a pendulous urethra are not good candidates for this surgery because of the risk of excessive shortening and the resulting ventral curvature on the urethra. The urethra should not be manipulated in the three months before to surgery in order for the stenosis and spongiofibrosis to heal entirely, therefore pinpointing the exact length and location of the stricture is essential.

Short limitations in the bulbous urethra produce the best results, as agreed upon by the majority of authors; as this section is mobile in both the proximal and distal directions, a reduction of up to 3 cm may be compensated. Therefore, end-to-end anastomosis poses negligible danger of subsequent 'ring' formation [15,17]. Because (i) the mucosa is highly differentiated and more abundant than the spongiosa, anastomoses can be performed on two planes (mucosa-mucosa and spongiosa-spongiosa), and (ii) the pars spongiosa is dense and well-vascularized, in an adequate blood supply, the bulbous urethra is ideally suited for urethroplasty. As a result, the likelihood of a stricture recurring again is decreased, as ischaemia and subsequent fibrosis are prevented.

In light of the extensive follow-up, the present series' size and results are quite encouraging. Three of five individuals with recurrent strictures had undergone urethrotomy before, whereas the other two were left untreated. Total cure rate was 97%, including the 93% treated by end-to-end anastomosis and the 3% cured after a second urethrotomy. With an average operating period of slightly over 2 hours, it is imperative that patients' legs be carefully placed to prevent neuromuscular consequences, most notably severe compartment syndrome, from occurring [18].

Both our own experience and the literature suggest that urethroplasty and end-to-end anastomosis is a relatively uncomplicated procedure with great outcomes for patients who meet the indicated selection criteria. Prospective investigations comparing the success rate of urethrotomy against dilatation for treating small strictures of the proximal urethra seem obsolete at this time [19]. For strictures of the bulbous urethral up to 3 cm in length, excision of the stenotic segment because primary anastomosis is the therapy of choice, and it offers good outcomes, with cure rates near to 100%. These success rates, however, were achieved only in a restricted group of patients who had all been operated on by the same highly seasoned surgical team. To accurately evaluate the outcomes, close monitoring and well-defined success criteria are essential. Stricture excision with primary anastomosis is an easy surgery with a high success rate that does not decrease over time. When treating patients with small strictures of the bulbous urethra, doctors should provide both palliative procedures like urethrotomy and curative ones like urethroplasty with end-to-end anastomosis.

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