



OUTCOME OF URETHRAL STRICTURES MANAGED BY GENERAL SURGEONS IN A RURAL SETTING OF INDIA

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ABSTRACT In resource limited settings victims of urethral strictures often seek healthcare, when the strictures are far advanced. For a surgeon, management is indeed a challenging task, given the severity and extent of disease, lack of expertise, enough skills and equipment in the healthcare facility. This study was conducted at a rural teaching hospital in central India. All patients were assessed for the extent and severity of strictures and to rule out other causes of lower urinary obstruction. Outcome of all patients was assessed with American Urological Association Urinary Symptom Score and Urinary Flow Rate (ml/sec) before procedure, post procedure and at 6–12 months. Between 2014 and 2015, 110 patients, between 18–75 years of age were enrolled in this study which showed that a third of patients treated with urethral dilatation and optical internal urethrotomy required another intervention. It is concluded that urethral dilatation and internal optical dilatation result in short term improvement in urine flow rates and symptoms. Urethroplasty, the current gold standard of therapy for urethral strictures, results in outcomes that are clinically meaningful and more cost effective for a patient. The American Urological Association (AUA) symptom score and Urinary Flow Rate may be used to objectively assess outcome following surgical management of urethral strictures.

KEYWORDS : Stricture urethra. Urethral dilatation. Internal optical urethrotomy. Urethroplasty

INTRODUCTION

Urethral strictures are common causes of lower urinary tract symptoms such as poor stream and incomplete evacuation in men. The sequelae of urethral strictures includes urinary tract infections, acute urinary retention, high-pressure voiding leading to secondary bladder thickening and irritability, bladder diverticula or perineal fistulas and abscess [1]. Blunt perineal trauma, urological instrumentation, chronic inflammatory disorders such as lichen sclerosus et atrophicus and sexually transmitted diseases are the most frequent causes of strictures; a large proportion are iatrogenic [1]. Treatment of urethral strictures can be challenging and frustrating both for the surgeon and the patient because interventions are associated with poor outcomes and high recurrence rates [2]. Urologists usually obtain urethrograms to know the site, number and extent of strictures and to choose the most appropriate treatment for stricture urethra. Several interventions such as dilations, optical internal urethrotomy and open urethroplasty are used to treat urethral strictures but none has produced outcomes that are satisfying to the patients. According to a narrative review, [3] most patients with urethral stricture are offered urethrotomy—a technique associated with high failure rates. Although open urethroplasty is the current gold standard against which the traditional treatments are compared, this technique needs skills, expertise and equipment, often not available in the resource limited settings [1, 4, 5]. In resource limited settings, victims of urethral strictures often seek healthcare when the strictures are far advanced or have resulted in serious complications [6, 7]. For a surgeon, management of such patients is indeed a challenging task, given the severity and extent of disease, lack of expertise, enough skills and equipment in the healthcare facility. We present here our experiences in managing urethral strictures in a rural teaching hospital in central India.

SUBJECTS AND METHODS

This study was conducted at JLNMC Hospital, Bhagalpur, Bihar, a teaching hospital in India between April 2013 and September 2013. Consecutive men, aged 18 years and older, presenting with symptoms suggestive of urethral stricture (slow and progressive reduction of urinary stream leading to a feeling of incomplete emptying, straining for the act of micturition) were enrolled. All patients were interviewed and examined and subjected to retrograde urethrography and micturating urethrography to confirm the diagnosis, assess the extent and severity of strictures and to rule out other causes of lower urinary obstruction. Ultrasonography was done in older patients to rule out prostatic enlargement. A subset of patients also underwent cystoscopy. The type of stricture (anterior vs. posterior), its length, and location were recorded on a pilot tested data collection form. The urethral strictures were categorized based on their size: mild, <1 cm; moderate, 1.1–2 cm and severe, >2 cm. The strictures were treated with periodic urethral dilations, internal optical urethrotomy (IOU) or

urethroplasty [3, 6]. The choice of the procedure was left to the individual surgeon. All interventions were done by general surgeons with more than 30 years of experience of dealing with urethral strictures. All patients were followed-up at 30, 60, 180 and 365 days following the procedure. At each follow-up visit, their symptoms were assessed and complications such as post-void dribbling, re-stenosis, false passage and development of fistulae were specifically looked for. Those who did not show up for follow-up to the hospital were contacted either by telephone or by post and their symptoms noted. Patients who continued to have symptoms even after urethral dilatation were subjected to either IOU or urethroplasty. The patients with failed urethral dilations were subjected to IOU if frequent dilations led to traumatic lesions or false passages. Patients underwent urethroplasty if they continued to have symptoms of urinary obstruction, IOU was not possible or complications such as false passage and fistulae occurred. Due to paucity of studies that have looked at standardised outcome measures for evaluation of success of treatment [1], we evaluated outcome by assessing AUA score [8]. Briefly, the score consists of the following variables: incomplete emptying, frequency of micturition, intermittency, urgency, weak stream, straining and nocturia. The score contains ordinal variables graded on a five-point

scale: the highest score indicates poor outcome. The AUA score on follow-up was noted and symptoms categorized as mild (score < 7), moderate (score 8–19) and severe (score > 20) [8]. Symptom scores were correlated with retrograde urethrograms and urinary flow rates to determine whether changes in the score were consistent with other clinical indicators of success or failure [9]. Because uroflowmetry and urodynamics were not available in our institution, average urinary flow rate (UFR) in ml/sec, was measured by asking patients to pass urine and recording the time in seconds they took to complete the act of micturition [10]. Statistical analysis was done by applying paired student t-test to compare the results of all the treatment modalities. The study protocol was approved by the institute's Review Board.

RESULTS

Between 2007 and 2009, 110 patients between 18 and 75 years of age were enrolled, with mean age (SD) 42 (15.4). Of the 110 men enrolled, 17 (15%) were older than 60 years (Fig. 1). The commonest symptoms were poor stream, incomplete evacuation of bladder, burning during micturition and straining for micturition (Table 1). The various causes of urethral stricture were iatrogenic (injury to the urethra during previous catheterisation), infection, trauma, sequelae of surgery (post-operative), and inflammation. Most strictures were anterior involving bulbar urethra; while others were in penile, membranous, prostatic urethra; and few had multiple strictures (Table 2). Seventy-two (65%)

patients underwent urethral dilatation; 16 (14%) underwent IOU and 22 (20%) underwent urethroplasty. Of the 72 patients with strictures treated by dilatation, 26 required another intervention; 12 were lost to follow-up. Of the 16 patients who underwent IOU, One patient with mild stricture, two with moderate strictures and one with several strictures required urethroplasty; one patient was lost to follow-up. After primary urethroplasty, 2 patients with moderate and severe strictures each required re-do urethroplasty

Outcome of all patients was assessed with American Urological Association (AUA) urinary symptom score before procedure, post procedure and after 6–12 months. The mean AUA score of patients pre-procedure, postprocedure and after 12 months of follow-up of all patients were 14.46, 12.53 and 11.59 respectively; for patients managed by dilatation it was 10.9, 12.59 and 13.23 respectively; for patients managed by IOU, 17.81, 14.31 and 10.86 respectively and for patients managed by urethroplasty, 23.5, 11.05 and 7.86 respectively. The paired student t-test applied to AUA scores, to compare the results of pre-procedure, post-procedure for all the modalities on treatment was 0.367 for dilatation and 0.131 for IOU which is statistically insignificant ($p>0.05$); while for urethroplasty it was 0.000 ($p<0.0001$) which is statistically highly significant (Table 4). The mean UFR of all patients pre-procedure, postprocedure and after 12 months of follow-up was 13.64, 14.64 and 14.38 respectively; for patient treated by dilatation it was 15.24, 14.39 and 14.02 respectively; for patient treated by IOU, 12.75, 15.56 and 12.8 respectively. and for patients managed by urethroplasty 9.05, 14.77 and 16.41 respectively.

The paired student t-test applied to UFR, to compare the results of before procedure, post procedure for all the modalities on treatment was 0.440 for dilatation and 0.810 for IOU which is statistically insignificant ($p>0.05$); while for urethroplasty it was 0.000 ($p<0.0001$) which is statistically highly significant (Table 4).

DISCUSSION

Our study shows that a third of patients treated with urethral dilatation and optical internal urethrotomy required another intervention. Most surgeons in limited resource settings treat their patients with urethral strictures with repeated dilations. Dilations are associated with several complications such as false passages, fistulae, and progression of strictures. In addition, oedema following dilatation may reduce urine flow rates and the scarred urethra makes the task of subsequent reconstruction technically difficult. Although dilation and urethrotomy continue to be the most commonly used techniques, their failure rate is as high as 47.6% and many patients progress to surgical repair [1, 2].

Despite high recurrence rates, urethral dilation continues to enjoy popularity because surgeons lack enough experience to perform urethroplasty [11]. Indeed, a previous survey has shown that a third of urologists in USA thought that endoscopic management, and not urethroplasty is the best option for patients with failed dilatations [12]. A recent study that evaluated cost effectiveness of various interventions in urethral strictures concluded that repeat urethrotomy or dilation are associated with poor outcomes and are not cost-effective, and therefore, can no longer be justified [12]. The IOU may improve symptoms for a while and may result in improvement in UFR, but not AUA scores. So, for most people with urethral strictures, dilations or IOU can offer short term palliation but not lasting relief from disabling symptoms. Urethroplasty is the current gold standard of treatment for urethral strictures. We have shown that short strictures could be excised and primary reanastomosis done by perineal route—this approach can result in significant improvement in urine flow rates. We used buccal mucosa in 5 of 22 patients who underwent urethroplasty. This material was initially used in hypospadias surgery but over the last two decades has grown popular among urosurgeons to reconstruct urethra because it is readily available, does not need delicate handling and has been associated with excellent outcomes. A recent study on 100 patients with penile (21%), bulbar (82%), and bulbomembranous (17%) urethral strictures undergoing anterior and posterior buccal mucosal graft urethroplasty using different graft locations showed that the final success rate of 92% was achieved over a mean follow-up period of 29.5 months [13]. We used end to end anastomosis in 15 (13.6%) patients and prepuceal flaps in 2 (1.8%). In our series 4 of 15 patients had failed end to end anastomosis and required buccal grafting. Our study shows that urethroplasty improves urine flow rates as well as symptoms and maintains its efficacy for a longer period. Why is urethroplasty not offered to most patients in

whom it is clearly the procedure of choice? Traditions die hard—most patients with urethral strictures are treated by general surgeons in public hospitals, who lack enough skills and confidence to perform urethroplasty. They also feel that, in resource limited setting sure throplasty will prolong the hospital stay, increase the cost of hospitalisation and might not be suitable in older individuals. These fears are irrational, for a recent study has shown that urethroplasty is safe even in older individuals [14], that most patients can be sent home within 24 h of the procedure [15] and is less costly than endoscopic treatment with internal urethrotomy for a short bulbar urethral stricture [16]. Our data show that, end to end anastomosis can be done even by general surgeons in resource limited settings and achieve excellent outcomes and these patients need not be referred to the urosurgeons. We conclude that urethral dilatation and internal optical dilatation result in short term improvement in urine flow rates and symptoms. Urethroplasty, the current gold standard of therapy for urethral strictures, results in outcomes that are clinically meaningful and more cost effective. The AUA symptom score may be used to objectively assess outcome following surgical management of urethral strictures. New tools such as fibrin glue or engineering material might become the standard of care in future. But before that we need to understand that the practice of dilatation of urethral strictures may not hold water and we need to offer patients more evidence based therapies, such as urethroplasty, with proven success rates.

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Conflicting Interest Nil.

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