ORIGINAL ARTICLE

Results of End to End Anastomotic Uethroplasty In Adult Patients of Stricture Urethera

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ABSTRACT

Objective: To see the results of stricture excision and end to end anastomosis of urethra after spatulation in patients with blind urethral stricture.

Patients and methods: This study was carried out from September 2006 to November 2010 in the Department of Urology, Nawaz Sharif Social Security Teaching Hospital Lahore. Twenty male patients, age above 16 years having blind stricture of bulbar or membranous urethra equal to or less than 2cm were included in the study. Patients with stricture >2cm, patients of stricture with neurogenic bladder and patients with malignant strictures were excluded from the study. Median follow-up was 2.5 years and minimum follow-up was one year.

Results: Twenty patients of blind urethral stricture with age range 20-44 years were treated. There was good result in 14 patients (70%), fair in 4 patients (20%) and in 2 patients (10%) urethroplasty failed. Overall success rate was 90%.

Conclusion: Excellent results can be expected from anastomotic urethroplasty in patients with blind stricture of bulbar or membranous urethra.

Key words: Stricture, Urethra, End to end urethroplasty

INTRODUCTION

Urethral stricture is a narrowing of the calibre of urethra caused by the presence of a scar tissue consequent on infection or injury.[1] Urethral dilatation with metal or wooden dilators has been practised since ancient time.[2] It has been the only treatment for centuries starting from 600 BC in India.[3] At the end of 17th century, an operation called "La Buttoniere" was devised in France which consisted of creating a button hole in the dilated urethra proximal to stricture.[4] In 18th century, Civiale and Otitis started blind internal urethrotomy but the results were poor.[3] The introduction of chloroform anaesthesia in 1857 and knowledge of aseptic and anti-septic measures ten years later, gave a confidence to the surgeon. At the end of 19th century, excision of stricture and end to end anastomosis of urethra was performed but due to frequent failure, the technique was abandoned. Thereafter the treatment continued to be periodic urethral dilatation, blind internal urethrotomy, perineal urethrostomy and the only addition was suprapubic cystostomy to divert urine.[5] In the second half of 20th century, famous English urethrologist Richard Turner Warwick revitalized urethroplasty based on the excision of stricture and primary urethral anastomosis with good results.[6] In the present study, we have evaluated the results of urethroplasty based on excision of stricture and anastomosis of normal urethral ends after spatulation in patients with blind urethral stricture of bulbar or membranous urethra.

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PATIENTS AND METHODS

This prospective study was conducted at the Department of Urology, Nawaz Sharif Social Security Teaching Hospital, Lahore from September, 2006 to November, 2010 on twenty patients of completely obliterating stricture (blind stricture) of bulbar or membranous urethra. The study was limited to male patients with age above 16 years. Patients having stricture ≤2cm in size were included in the study. Patients with malignant stricture, stricture more than 2 cm in size or patients of stricture with neurogenic bladder were excluded from the study. Any case in which end to end anastomosis could not be accomplished without grafting was also excluded from the study. Twenty patients who satisfied the inclusion criteria presented during study period were evaluated by detailed history, history of previous treatment for stricture, physical examination and investigations. Investigations carried out included complete blood count, urine routine examination, blood urea, serum creatinine, screening for hepatitis B and C, blood grouping and cross-matching, ECG, X-ray chest, retrograde urethrogram and antigrade cystourethrogram in selected cases. Surgery was performed under general or spinal anaesthesia. After anaesthesia patient was placed in exaggerated lithotomy position. Midline incision in the perineum was applied. Incision was deepened to cut subcutaneous fat and bulbocavernous muscle in the midline to expose the bulbar urethra. A metallic bougie was passed per urethra upto the stricture to facilitate the dissection. A window was created between the urethra and deeper structure, and urethra was dissected away from the corpora

cavernosa distally upto penoscrotal junction. Proximally dissection was carried upto the stricture and then more proximally approaching the normal part of urethra. In bulbar stricture at this point stricture was excised. Both normal ends were spatulated and four interrupted sutures of 4/o polyglycolic acid were applied over Foly catheter 18 Fr. Urethra was transected at the stricture level.Bougie was passed into the prostatic urethra through cystostomy opening and adjusted in such a position that the tip of the bougie was projected into the perineum .Incision was made at the projecting tip of bougie to create an opening into the proximal urethra.

RESULTS

Twenty patients with blind bulbar or membranous urethral stricture were included in the study. Age of the patients ranged between 20-44 years. Mean age was 32 years (Table 1). In majority of our cases cause of the stricture was trauma. Eleven patients (55%) had history of fall astride and direct hit to the perineum, six patients (30%) had road traffic accident with pelvic fracture and injury to the posterior urethra. Two patients (10%) had infective strictures and in one patient (5%) cause of stricture could not be ascertained (Table 2).

Table 1: Age of the patients at the time of presentation

Age (Years)	n=	%age
20 – 29	10	50.0
30 – 39	4	20.0
40 – 44	6	30.0

Table 2: Etiology

Etiology	n=	%age
Fall astride	11	55.0
Road Traffic accident	6	30.0
Infective	2	10.0
Unknown	1	5.0

In 14 patients (70%) stricture was involving the bulbar urethra and in 6 patients (30%) stricture was in the membranous urethra (Table 3). All patients had previous history of treatment for stricture Sixteen patients (80%) had history of internal urethrotomy. Two patients (10%) had history of urethroplasty. All patients (100%) had history of urethral dilatation (Table 4). In all patients, stricture was excised and overlapping end to end anastomosis of urethra with good spatulation was performed. Operative time was between ninety minutes to one hundred and eighty minutes. Blood transfusion was required in six (30%) patients. Wound infection was developed in two (10%) patients which was managed successfully. Minimum follow-up period was one year. Mean follow-up was 2.5 years. Four (20%)patients developed stricture at the site of anastomosis. They were managed by optical internal urethrotomy and two of them were put on CISC. One patient was impotent before surgery and out of remaining 19 cases, 1 patient (5.3%) developed impotence (Table 5). In 14 patients (70%) results were good, 4 patients (20%) results were fair and 2 patients (10%) results were poor. Overall success rate was 90% (Table 6).

Table 3**:** Location of stricture

Location	n=	%age
Bulbar urethra	14	70.0
Membranous Urethra	6	30.0

Table 4: Previous history of treatment for stricture

History of treatment	n=	%age
Urethroplasty	2	10.0
Optical internal urethrotomy	16	80.0
Urethral dilatation	20	100.0

Table 5: Frequency of complications

Complication	=n	%age
Wound infection	2	10.0
Re-stricture	2	10.0
Impotence	1	5.3
Incontinence	-	-
Deep venous thrombosis	-	-

Table 6**:** Results of end to end anastomotic uethroplasty

Result	n=	%age
Good	14	70.0
Fair	4	20.0
Poor	2	10.0

DISCUSSION

Urethral stricture remains a difficult surgical problem for men since known medical history.[7] For many centuries there was not much difference among the treatment of urethral stricture of any aetiology. At present different treatment options are periodic urethral dilatation, optical internal urethrotomy and urethroplasty with or without grafting. After the introduction of optical system by Hopkins in 1960 and later Sachse in 1970, optical internal urethrotomy has been widely practised. It is easy to use and has low rate of complications.[8] This resulted in continuing debate about how best to treat urethral stricture, especially as urologist tend to choose the simplest and least invasive solution[10]. However, the results of different series raised doubt about the efficacy of this procedure and mentioned high recurrence rate approaching 80% in five years.[10-15] Optical internal urethrotomy is only curative for short stricture (<1 cm) that are not having significant spongiofibrosis.[11] For all other strictures it is only a palliative management.[1] Moreover its role is very limited in the management of blind urethral stricture. The standard treatment of blind stricture of bulbar and membranous urethra is excision of stricture and overlapping anastomosis of the spatulated urethral ends[3] This anastomosis is technically demanding because of narrow space and difficult position. For good results, segment of fibrosis should be totally excised and urethral ends should be

adequately spatulated to permit bougie of 28/32 easily. This spatulation is important because any contraction of anastomosis after surgery would not compromise the calibre and voiding remains adequate. Moreover urethral anastomosis should be tension free. The key to anastomotic urethroplasty lies in 2 anatomical points. First that the bulbar urethra is elastic and can be stretched for 2-4 cm to overcome a defect and allow an overlapping spatulated anastomosis and second that the natural course of bulbar urethra is nearly semicircular so that by straightening out the natural curve, even longer defects can be bridged than by elasticity alone.[1] Main limitation of this procedure is length of stricture. If we try to bridge longer gap, it may result in curvature of the penis, and the anastomosis will be under tension with risk of failure. So the stricture segment should not be longer than 2 cm. Despite the impressive advances in surgical treatment of urethral stricture since the second half of the past century, there is not yet a definite cure for all of these patients with long strictures. Perhaps in the present century with the progress made in the use of artificial tissue replacement and bioengineering with bovine collagen compounds combined with tissue and embryonic cell culture, the urethra will be able to be reconstructed with better results.[16] In our study stricture excision and overlapping end to end anastomosis was done after spatulation of the urethra in 20 patients with bulbar or membranous stricture. Age range of the patient was 20-44 years, mean age was 32 years. Most of the patients presented between 20-39 years. High incidence of traumatic stricture in 3rd and 4th decade had also been reported in other series.[14] Median follow-up was 2.5 year. Complications of end to end urethroplasty are restricture and erectile dysfunction. Restricture is usually due to spongiofibrosis consequent to ischemia and impotence is mainly because of injury to deep penile artery occurring at the time of trauma. Impotence is sometimes due to the neural injury.[16] Incidence of erectile dysfunction in one study was 7.1% and in another study it was 5.6% after surgery.[4.17] In our study nineteen patients were sexually potent before surgery. One patient (5.3%) developed erectile dysfunction which is comparable to other studies.[17] Fourteen patients (70%) had good results. Four patients (20%) had fair results and 2 patients (10%) had poor results. Overall success rate was 90%. In most of the studies cure rate is round about 90% our results are comparable with other series.[2,18-20]

CONCLUSION

Stricture excision and end to end anastomosis is straight forward and simple operation that gives good results in patients with blind stricture of bulbar or membranous urethra less than 2 cm.

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