

ASSESSMENT OF THE OUTCOME OF OPTICAL INTERNAL URETHROTOMY

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ABSTRACT

Background: Stricture urethra is a common surgical problem, especially in under developed countries. **Objective:** To determine the outcome of optical internal urethrotomy under local anesthesia in treatment of urethral stricture disease. **Materials and methods.** This descriptive study was conducted in department of Urology & Renal Transplantation, Quaid-e-Azam Medical College /Bahawal Victoria Hospital, Bahawalpur, from 1st July 2009 to 30th June 2012. Total number of 100 patients of age 16 to 75 years with diagnosis of stricture urethra of any etiology on Retrograde Urethrogram and MCUG \leq 2cm were included in the study. Patients with blind end strictures on retrograde and voiding cystourethrogram, stricture $>$ 2cm in size or patients of stricture with neurogenic bladder, diabetes mellitus, congenital or malignant strictures were excluded from the study. Retrograde urethrogram and voiding cysto-urethrogram was done in every patient to assess stricture length and location. Then optical internal urethrotomy was performed under local anesthesia using 2% xylocain gel and 3mg inj. midazolam given intravenously for sedation. Patients were retained under observation in ward for 24 hours to assess complications like pain, bleeding and extravasation of urine. Follow up period was 6-12 months for these particular patients under study. **Results:** Majority of the patients (60%) were between 46 to 60 years of age. Iatrogenic injuries were the main cause (45%) followed by traumatic causes (40%). The most common site was bulbous urethra in (59%) followed by membranous urethra (17%). Post procedure morbidity comprised of irrigation fluid extravasations (3%), bleeding (6%) and urinary incontinence in (2%) patients. Recurrent strictures were noted in (15%) patients. In our study, initial success rate was (60%) and overall success rate was (83%). **Conclusion:** Optical internal urethrotomy can safely be performed under local anesthesia as a day-care procedure and the procedure is well tolerated by the patient without any hospitalization and anesthesia risk.

Key words: Stricture urethra, Optical internal urethrotomy, Local anesthesia, Complication rate.

INTRODUCTION

Urethral stricture remains complicated surgical problem for mankind since ancient time and thus the treatment remains to evolve.¹ Urethral strictures are fibrotic narrowing composed of dense collagen and fibroblasts. The narrowing restricts urine flow and cause dilation of the proximal urethra and prostatic ducts.² Biochemical analysis of urethral scar tissue reveals increase in ratio of collagen type 1 and III when compared to normal distensible urethral spongiosum.³ Most strictures being acquired from perineal trauma (direct and indirect) or infections (gonococcal and non-gonococcal) but iatrogenic causes, including urological instrumentation and placing indwelling catheters, which result in strictures anywhere in the urethra, are the most common causes.⁴

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The patients with stricture urethra usually complain of retention of urine, thin stream, hesitancy and dribbling of urine. The decision as to which operative technique should be used is determined by various factors, including stricture length and location, etiology, general health and age of the patient.^{4,5} The different modalities of treatment include dilatation of urethra, optical internal urethrotomy with or without catheterization and open reconstructive techniques. However, none of the modalities are satisfactory to manage the urethral stricture because of the reformation of fibrosis and stricture.⁶ Urethral dilatation and optical internal urethrotomy are adequate to treat most patients and have a success rate of about 50% but both these procedures need to be repeated on more than one occasions with the risk of complications.^{1,6,7} Urethroplasty is generally reserved for those patients who failed to respond to repeated dilatation or urethrotomies as well as those with complex strictures at presentation.⁸

Many techniques have been used to treat urethral strictures.^{9,10} Since the introduction of optical internal urethrotomy by Sachse in 1974 using a fine movable scalpel to incise urethral stricture under direct vision, this technique has been used as the primary treatment of new as well as recurrent strictures.^{1,7} Good voiding results can be achieved with optical internal

urethrotomy independent of etiology and stricture location with an overall success rate of 80%.¹¹ The complication rate of internal urethrotomy is lower than urethral dilatation. The most common complications after optical internal urethrotomy are bleeding, breaking of knife, extravasation of urine, false passages and recurrent strictures.^{7,11,12} Moreover, optical internal urethrotomy also has the advantage of minimal anesthesia requirement, even can be performed under local anesthesia on outpatient basis.⁷

The present study was conducted to evaluate the outcome of optical internal urethrotomy under local anesthesia, at the Department of Urology & Renal Transplantation, Bahawal Victoria Hospital, Bahawalpur.

MATERIALS AND METHODS

This descriptive study was conducted at the Department of Urology & Renal Transplantation, Bahawal Victoria Hospital/Quaid-e-Azam Medical College, Bahawalpur from 1st July 2009 to 30th June 2012. Patients of age 16 to 75 years with diagnosis of stricture urethra of any etiology on Retrograde Urethrogram and MCUG \leq 2cm were included in the study. Patients with blind end strictures on retrograde and voiding cystourethrogram, stricture $>$ 2cm in size or patients of stricture with neurogenic bladder, diabetes mellitus, congenital or malignant strictures were excluded from the study, additionally the patients with urinary bladder or rectal injury at the time of trauma were also excluded.

Total number of 100 patients who fulfilled the inclusion/exclusion criteria were selected. Detailed history and physical examination of every patient was done. The investigations done before the procedure were blood complete examination, urine routine examination, screening for Hepatitis B & C and abdominal ultrasonography, retrograde urethrogram and voiding cystourethrogram.

Procedure

Procedure was performed under local anesthesia using 2% xylocain gel and 3mg inj. Midazolam was given intravenously for sedation. After proper instillation of xylocain gel per urethra, patient was placed in exaggerated lithotomy position.

Antibiotic prophylaxis was provided in every patient. The procedure was performed by using 21 Fr urethrotome which was passed into the urethra up to the level of stricture and stricture was incised at 5, 7 and 12 'O clock with the help of cold knife, till urethrotome, under the guidance of a metallic guide wire reached into the urinary bladder. Normal saline (0.9%) was used for irrigation. Urethrotome was removed and sheath retained and guide wire passed into the urinary bladder through the sheath and a 16 Fr two way Foley's catheter passed over the guide wire, which was retained for 7-10 days.

All procedures were performed by the same urologist without significant changes in technique. Patients were retained under observation in ward for 24 hours and their vital signs were monitored regularly. Immediate postoperative complications like pain, bleeding and extravasation of urine were observed until they were satisfactorily discharged from hospital. Follow up was initially fortnightly and then at 1 month interval. Follow up period was 6-12 months for these particular patients under study. Patients were assessed by cystourethroscopy for delayed complications like recurrent stricture on follow up.

RESULTS

Total number of 100 patients with stricture urethra were included in this study. Age ranged from 16 to 75 years, with mean age of 50 ± 9.65 years. Majority of the patients (60%) were between 46-60 years of age. Majority of the patients (65%) presented with poor urinary stream while 20% patients presented with retention of urine and were on suprapubic. The most common etiology for stricture urethra was iatrogenic (45%) i.e. Trans Vesical Prostatectomy (post-tvp), transurethral resection of prostate (tur-p), cystoscopy. While 40% patients had history of trauma (26% with road traffic accident and 14% had history of fall and other trauma to perineum or urethra) as shown in Table-I. The length of strictured part was less than 2cm in all patients with an average length of about 1.0cm. The most common site for stricture was bulbar urethra (59%) while 2nd common site was membranous urethra (17%).

The post-operative complications are shown in Table-II. Extravasation of urine and bleeding occurred in 03(3%) and 06 (6%) patients respectively which were managed conservatively and did not require any further intervention. Pain during

procedure and postoperatively was noticed in 14% patients which was managed by analgesics.

Table I: Etiology of Urethral Stricture. (N=100)

Etiology	No. of Patients	Percentage
Iatrogenic	45	45
Transurethral resection of prostate (TURP)	23	23
Transvesical prostatectomy (TVP)	10	10
Transurethral resection of bladder tumor	08	8
Cystoscopy	04	4
Trauma	40	40
Direct	14	14
Indirect	26	26
Infection	09	9
Others	06	6

Table II: Post-operative Complications.

Complications	No. of Patients	Percentage
Pain	14	14
Extravasation of Urine	03	3
Bleeding	06	6
Urinary Incontinence	02	2
Recurrent Stricture	15	15

Recurrent stricture developed in 15% patients out of which 12% were treated by repeated internal urethrotomies while in 3% patients urethroplasty has to be done. Urinary incontinence was found in 2% patients. Overall (40%) patients developed complications post-operatively and initial success

rate was 60%. Extravasation of urine, bleeding and post operative pain was settled conservatively. So, overall success rate was 83%.

DISCUSSION

The natural history of urethral stricture begins with a lesion of the urethral mucosa and infection followed by a fibrotic scar.¹³ A 50% reduction in urethral circumference reduces the lumen size by 25% and produces significant urodynamic symptoms.⁷ The overall incidence of stricture disease might be as high as 0.6% in certain populations.¹⁴ For the evaluation of stricture, Retrograde urethrography (RUG) and voiding cystourethrography (VCUG) dynamic contrast imaging is the best approach despite the advent of newer imaging methods. Both studies are done commonly to assess stricture length and location.^{15,16}

Urethral stricture is one of the oldest known urological diseases and remains a common problem with a high morbidity.¹⁰ For many centuries there was not much difference among the treatment of urethral stricture of any aetiology. Treatment consisted mainly of urethral calibrations and dilatations. In addition to being very bothersome and painful, these procedures did not cure the patient and were the source of serious complications such as infections, sepsis, bleeding, urethral perforation.^{9,10}

After the introduction of optical system by Hopkins in 1960 and later Sachse in 1970,s optical internal urethrotomy has been widely practised.¹⁶ The advent of optical urethrotomy has restored the confidence of many urologists who would otherwise have had reservations about the prospects regarding the management of urethral strictures. Optical internal urethrotomy is now an established procedure of choice.¹³ Urethral strictures can be seen in patients of all ages, but their etiology differs among different age groups. In children traumatic, congenital and those associated with idiopathic urethrorrhagia are more common.¹⁴ The age at presentation in our study varied from 16 years to 75 years with mean age of 50±9.65 years. Most of the patients presented between 46-60 years in our study which is slightly higher than reported in two different studies by Balandi SS et al¹⁷ and Meneghini A et al¹⁸ but much higher than reported by Mathur R et al.⁶ The results in our study confirm that patient age is not a factor in the success of procedure and optical internal

urethrotomy should not be withheld from patients on the basis of age as observed in other studies.^{11,13,17}

The most common presenting complaint in our study was poor urinary stream with retention of urine was the 2nd most common. Pervez A et al¹³, Yunas M et al⁷ and Balindi SS et al¹⁷ also observed the poor urinary stream as the most common presenting complaint in their studies. Iatrogenic trauma to the urethra during variety of procedures like transurethral resection of prostate, transvesical prostatectomy, transurethral resection of bladder tumour and cystoscopy was the most common cause of the urethral stricture in our study while trauma (direct or indirect) was observed as the common cause of stricture urethra in many previous studies.^{7,12,13,17}

Bulbomembranous urethra was observed as the commonest site for stricture in our study which was found in 76% patients which is very much comparable to Balindi SS et al¹⁷ while Pervez A et al¹³ and Yunas M et al.⁷ Recently the ideal stricture length for optical internal urethrotomy has become a contentious issue. Optical internal urethrotomy is a very successful procedure in highly selected patients with short strictures (1.0-1.5cm) and minimal spongiofibrosis. Patients who are poor candidates for initial or repeated internal urethrotomy include those with multiple and long (2-5cm) penile strictures.^{7,18} In our study, it was also observed that with long strictures (> 1.5cm), the success rate decreases and chances of recurrences increases. Therefore it needs to be carried out for more than one times along with active and passive dilatations as was also observed by Meneghini A et al¹⁸ and Khan M et al.¹²

Mohanty NK et al¹⁹ reported post-operative pain in 7% while in our study, it was found in 14% patients. Incidence of recurrent stricture in our study was 15% while Gheorghiu V et al²⁰ reported its incidence 14.81%, Mathur M et al⁶ and Balindi SS et al¹⁷ 9.2% and 13.33% respectively. While Islam M et al²¹ and Khan M et al¹² reported a much higher recurrence rate i.e. 22.8% and 20.0% respectively. An important point to note is that repeated attempts at urethrotomy do not increase success rates.¹⁵ In those patients who undergone prior urethrotomies, the procedural difficulty and decrease success of urethroplasty was observed²²

while some studies have indicated that repeated endoscopic management is safer and more cost effective than open repair.²⁴ However in our series, 15 (15%) patients underwent repeated optical urethrotomy successfully for recurrent strictures and only 03 (3%) patients needed subsequent urethroplasty. Post procedural bleeding observed in different studies range from 04-24%,^{7,12,17} while in our study it was found in 6% patients. Khan M et al¹² and Shittu OB et al²⁴ observed extravasation of urine in 2.4% and 2.5% respectively while in our study this rate was 3%. Incidence of urinary incontinence in our study was 2% which was very much comparable to many previous studies.^{21,25} So, in our study initial success rate was 60% with overall success rate upto 83% which is very much comparable to many previous studies.^{6,7,12,13,24}

CONCLUSION

This study concludes that optical internal urethrotomy is a safe first-line treatment for urethral strictures, independent of etiology and location of stricture, with an overall high success rate. Moreover, it can safely be performed under local anaesthesia as a day-care procedure and the procedure is well tolerated by the patient without any hospitalisation and anaesthesia risk. Recurrent strictures are uncommon and most can be effectively managed with dilatation or repeated urethrotomies.

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