

OPTICAL URETHROTOMY IN URETHRAL STRICTURE

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Summary *Forty-six consecutive patients with urethral stricture of different aetiology underwent optical urethrotomy, the stricture had long standing history and it had been treated repeatedly by dilatation in most of those patients, the site of strictures were mainly in bulbar and membranous urethra (39.1%, 32.6%) respectively, they were short (65.4%) and single (87%) in those patients. The patients had been followed-up over a period of thirty-three months. The majority (82.6%) of the patients required no further procedures. The results were related to the length of urethral stricture. Though optical urethrotomy can be repeated, the chance of failure following third of subsequent urethrotomy was greater than after first or second procedure. Optical urethrotomy was effective procedure and should be the first choice of treatment for most patients with urethral stricture.*

Introduction

The stricture of the male urethra have been treated by dilatation and by blind otis urethrotomy which has been practiced for over a century. Though visual incision of urethral strictures were encouraged by Ravasini (1957)^{1,2,3} and Keitzer (1961)⁴. The direct vision urethrotomy using a specially devised scalpel blade was first introduced by Sachse in 1974^{5,6,7,8,9,10}. Since that report an increasing member of urologist have advocated this approach. So that optical urethrotomy is now accepted as a simple and effective procedure that should be performed as initial treatment of stricture in the male urethra.

Patients and Methods

This is a prospective study conducted

from January 1996 till September 1998 in Basrah General Hospital, Department of Surgery. Forty-six male patients were included in our study with an age rang from 17-75 years (a mean age of 44.6 years) table I. Most of the patients were complaining of difficulty in micturation with straining, poor stream of urine and some with acute retention of urine. Those patients were referred from out patient department, orthopaedic department and private clinics. Patients were evaluated by detailed history, physical examination, I.V.U, retrograde urethro-gram and other laboratory investigation. In all cases internal optical urethrotomy were preformed using cold-knife Sachse urethrotome. prophylactic antibiotic in form of gentamicine 80 mg i.v was used routinely during the induction of anaesthesia.

Instruments and operative technique

Optical urethrotomy is performed under the same aseptic condition and

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preparation as is any transurethral operative procedure. The instrument used consists of the following components:

- 1-Urethrotome sheath with round, blunted aperture to allow straight forward urethroscopy. A side arm allows introduction of 4 Fr. ureteral catheter through the stricture for guidance if needed.
- 2-Obturator for introduction into the meatus.
- 3-Lens for urethroscopy either (0 – degree angle or 30° fore- oblique).
- 4-Working element from the resectoscope. A flat, cold knife blade is inserted at the usual site of the loop.
- 5-Fiberoptic light cable.
- 6-In flow for non-hemolyzing irrigating solution.

Under general or spinal anaesthesia patients were put in lithotomy position with the thigh flexed to 45°, the patients were draped and full sterile precautions taken as for any surgical procedure. The penis was wrapped in a sterile swab so that only the external meatus and glans remain uncovered after the toweling, the sheath with its obturator lubricated with 2% xylocaine jelly and is inserted into the meatus and navicular fossa. The obturator is withdrawn. The instrument is advanced into the urethra under direct vision with the 0-degree or 30° fore-oblique lens until the distal end of the stricture is seen, a 4 Fr ureteric catheter was passed through the strictured area and serves as a guide for cutting. Though the incision in most of cases at the 12 o'clock position, a 6 o'clock position was performed in the penile urethra, and for some patients multiple radial incisions were used. The cutting is done by moving the whole instrument in a short upward and backward, making a short shallow incisions to avoid perforations. The first incision is done through the distal portion of the stricture. The lumen of the urethra opens progressively after each cut. Gradually the whole length of the stricture or

several strictures are cut to allow adult cystoscopic sheath to pass the bladder and urine can be evacuated and sampled. The prostatic urethra, the vesical neck, and the bladder can be inspected, and other lesions, such as stones, cystitis, vesical neck contracture, or tumours in the bladder or prostate can be recognized. After termination of the procedure, a 16-18 Fr silastic Foley's catheter is placed into the bladder, and it was left for 2-3 days in stricture less than 2cm in length and 7 days in stricture exceeding 2cm in length or if there were considerable complications.

Criteria for evaluation in follow up

The patients were followed from 10-33 months (a mean of 15.4 months). The analysis of the result of optical urethrotomy has been based on follow up assessment of the patients symptoms with routine out-patient appointment two weeks after procedure and then at monthly interval or whenever they notice any slowing of urinary flow and/or signs of infection, over the period of the study. Repeated urethrotomies were performed during follow-up when patients were symptomatic and restricting was proved by urethroscopy. A total of 58 urethrotomy were performed on those 46 patients. Failure of urethrotomy procedure occur if another form of treatment is needed to relief the stricture symptoms. The result of this subjective assessment were considered in four categories:

- 1-**cure**: by which the patient stated that he had normal urinary stream.
- 2-**better**: by which the urinary stream improved initially, then diminish but not so as to require further treatment.
- 3-**same**: which noted no improvement in the urinary stream.
- 4-**worse**: with a progressive deterioration of urinary stream.

<i>Age in years</i>	<i>No. of patients</i>
10-19	1
20-29	12
30-39	17
40-49	3
50-59	2
60-69	9
70-79	2
Total	46

Table I. Age distribution of 46 patients

Results

The aetiological causes of strictures were decided from the history, however in five patients (10.7%) not able to determine the aetiology and had to be classed as idiopathic, trauma and infection were responsible for nearly half of total number (table II), nine of the fifteen post traumatic patients were war-related injuries.

<i>Aetiology</i>	<i>No. of patients</i>	<i>Percent</i>
<i>Traumatic</i>	15	32.6
<i>Infective</i>	10	21.7
<i>Open prostatectomy</i>	9	19.6
<i>Catheterization</i>	7	15.3
<i>Idiopathic</i>	5	10.9
Total	46	100

Table II. Aetiology of urethral strictures (in 46 patients)

The duration of the stricture symptoms shown in table III. This was shown to be more than four years in twenty patients indicating the long-standing nature of many of such strictures.

<i>Duration in years</i>	<i>No. of patients</i>	<i>Percent</i>
<i>0-1</i>	6	13
<i>1-2</i>	6	13
<i>2-3</i>	7	15.3
<i>3-4</i>	7	15.3
<i>>4</i>	20	43.5
Total	46	100

Table III. Duration of stricture symptoms (46 patients)

Previous methods of treatment included dilatation in thirty-eight patients and dilatation had been repeated on several occasions. No previous treatment was given in six patients (table IV).

<i>Treatment</i>	<i>No. of patients</i>	<i>Percent</i>
<i>Dilatation</i>	38	82.6
<i>Nil</i>	6	13
<i>Blindurethrotomy</i>	2	4.4
Total	46	100

Table IV. Previous stricture treatment (46 patients)

Twenty-five of the forty-six patients in whom we performed optical urethrotomy had complications of previous stricture treatment (table V).

<i>Complication</i>	<i>No. of patients</i>	<i>Percent</i>
<i>False passage</i>	12	48
<i>Urinary sepsis</i>	5	20
<i>Haematuria</i>	4	16
<i>Urethral stone</i>	2	8
<i>Urethral fistula</i>	2	8

Table V. Complications of previous stricture treatment (25 patients)

The site of strictures as seen on urethroscopy is shown in table VI. Majority were located in the bulb of urethra (39%) and membranous urethra (32.6%) complex stricture found in (8.7%) of patients.

<i>Site of stricture</i>	<i>No. of patients</i>	<i>Percent</i>
<i>Bulbar</i>	18	39.1
<i>Membranous</i>	15	32.7
<i>Bladder neck</i>	6	13
<i>Complex</i>	4	8.7
<i>Penile</i>	3	6.5
Total	46	100

Table VI. Site of urethral stricture (46 patients)

The characters of the strictures are shown in table VII. Single stricture and less than two centimeter in length were commonly found.

Character of urethral stricture			
Length of stricture		No. of stricture	
<2 cm	> 2cm	Single	Multiple
30	16	40	6
(65.4%)	(34.6%)	(87%)	(13%)

Table VII. Character of urethral strictures (46 patients)

A total of fifty-eight urethrotomies were performed on forty-six patients. Thirty-eight (82.6%) required no further procedures. One patient required three procedures, more than three procedures with a maximum of five required in one patient (table VIII).

No. of urethrotomies	No. of patients	Percent
1	38	82.6
2	6	13
3	1	2.2
>3	1	2.2
58	46	100

Table VIII. Number of urethrotomies per patient (46 patients)

The complications of fifty-eight procedures are shown in table IX.

Complication	No. of patients	Percent
Urinary sepsis	4	6.8
Extravasation	1	1.7
Knife broke	1	1.7

Table IX. Complication of optical urethrotomy (58 procedures)

Judging the well being of the patient was not difficult, being based on the satisfaction of patient, absence of infection and adequate bladder emptying. Eight patients were lost to follow-up, the results of optical urethrotomy in 38 patients showed that 30 (78.2%) cured and had normal urinary stream (table X).

Results of optical urethrotomy	No. of patients	Percent
Cured	30	78.9
Better	6	15.8
Same	1	2.6
Worse	1	2.6
Total	38	100

Table X. The results of optical urethrotomy (38 patients)

Two patients in whom the procedure failed to relieve the symptoms in the first and stenosis worsened in second, there was no death in this series.

Discussion

Urethral stricture is a common and challenging problem for which man has attempted to find a remedy^{11,1}. Optical urethrotomy with the Sachse urethrotome has radically modified the management of stricture of the male urethra^{11,12,13,14,15}, it is a common practice nowadays and has reduced the need for urethroplasty^{2,16,17,18}. We agree with Fowler (1995)¹⁹ and other authors^{20,21}, that the relative youthfulness of patients with symptoms of urethral stricture often distinguishes them from patients with prostatic enlargement who are characteristically more than fifty years old. Trauma is the main causative factor, yet, infection still constitutes a considerable percentage in the aetiology of urethral stricture probably because of the delayed detection and inadequate treatment of infective causes. Five patients had unknown aetiology for their urethral stricture, although this consistent with other series^{2,14,16,22,23}, we think that possible causes can be explored if this problem is studied in depth. In our patients we think that underestimation of minor symptoms prior to the presentation and delay in seeking medical advice until severe symptoms develop, might explain the fact that those patients failed to give history relevant to the aetiology. We record long-standing history of urethral stricture in most patients probably because the symptoms evolved so insidiously that the

patients hardly remember the precise time of onset. The majority of patients (82.4%) who underwent optical urethrotomy had had history of repeated urethral dilatation, while in six patients (13%) the procedure was carried out as the first line of treatment, we agree with other authors^{6,16,24}, that the results were unrelated to the length of history or number of previous dilatation. Twenty five (54.2%) had complications arising from previous stricture treatment, false passage was virtually eliminated by urethrotomy, urinary sepsis was treated by appropriate antibiotics according to their cultures, haematuria presented no clinical problem and no patient required transfusion, urethral stones were so small and were expelled easily by force of jet of urine after optical urethrotomy, fistulous tracts healed spontaneously within two weeks after urethrotomy. Our results in treatment of complicated cases match well with results of Shah (1985)²⁵, Sandozi (1988)¹⁴ and John et al (1989)²⁶. The incision used^{1,27,28,29}, depends on the site, length and amount of fibrous tissue, as a 12 o'clock incision in the penile urethra may involve the corpora cavernosa. The time for which the catheter was retained^{2,3,20,28,29}, was decided depending on character of stricture and presence or absence of procedure complications. Long stricture with the presence of complications required longer catheterization. We agree with Mohanty (1988)³⁰, Bekirov (1982)²⁴ and other authors^{21,31,32,33}, that prolonged catheterization only result in the urinary tract infections. Though some patients required repeated urethrotomies during follow-up, they tolerated those

procedures well, the reason for recurrence of stricture was related to the length of the urethral stricture. There was no mortality in our study, as it was shown in other literature^{34,35,36}. Various complications were described by others^{7,23,37,38}, we treated urinary sepsis with appropriate antibiotics according to their cultures, extravasation at the time of surgery usually related to passage of the instrument outside the urethra, this was treated conservatively by catheter drainage and antibiotics. In one instance, broken knife was recovered relatively easily with a biopsy forceps. The two failures we had, probably occurred because they had long strictures which had been complicated by infections. The urethroplasty is to be reserved for the treatment of long obliterative strictures. Our result matches most of the reports concerning the current practice employing the optical urethrotome and we think that the procedure is one of the great advances in urology.

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