

The Role of Internal Optical Urethrotomy in the Management of Urethral Stricture

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Abstract: Urethral stricture in the male still presents one of the most common and challenging problems to the urologist. Treatment options include dilation, endoscopic internal urethrotomy & urethroplasty, however optical internal urethrotomy offers faster recovery, minimal scarring, and less risk of infection. Aim of the study was to evaluate the efficacy of internal optical urethrotomy in the treatment of patients with urethral stricture. A total of 75 male patients (16-25 years of age) having urethral strictures were treated with internal optical urethrotomy at Al-Yermouk Teaching Hospital/Baghdad/Iraq in the period between January 2013 and January 2016. Follow-up period ranged from 1-3 months. Outcome was graded as good, fair & poor. It was found that out of 75 patients, 28(37.3%) were between 21 and 30 years of age. The most common cause of stricture was trauma in 40 (53.3%) & the most common presenting complaint was poor urinary stream in 32(42.6%) patients while the most common site was bulbous urethra in 48 (64%) cases followed by penile urethra in 16 (21.3%) cases. Overall response rate was good in 52 (69.3%) patients. Eleven (14.6%) cases showed minor post-operative bleeding with no major complications. We concluded that internal optical urethrotomy is a safe and effective procedure in treating urethral stricture.

Keywords: urethral stricture, optical urethrotomy

1. Introduction

Urethral stricture causes a blocked or reduced flow of urine which can result in a range of manifestations, from an asymptomatic presentation to severe discomfort. Moreover, it can lead to serious complications such as urinary infections and renal insufficiency secondary to urinary retention. 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].

Patients who have urethral strictures most often present with obstructive voiding symptoms and urinary tract infections such as prostatitis or epididymitis^[2].

The treatment modalities vary according to site, length of stricture, etiology and local factors^[3]. Currently, three different interventions are used to treat urethral strictures: dilations, optical internal urethrotomy, and open urethroplasty^[1].

Most patients with urethral stricture are offered optical internal urethrotomy using a fine movable scalpel to incise urethral stricture under direct vision. In fact this procedure is used as the primary treatment of new as well as recurrent strictures^[4, 5, 6, 7]. In general a cure rate of 20-30% is attained with optical urethrotomy^[8].

The objective of this study was to assess the role of optical internal urethrotomy in treatment of urethral stricture and to evaluate the symptomatic improvement and efficacy of this treatment option.

2. Patients and Methods

This study was conducted at the urology department, Al-Yermouk Teaching Hospital in the period between January 2013 and January 2016.

A total of Seventy five male patients, with an age ranged from 16-52 years (mean age 36.3 years) presenting with history of urethral stricture, were included in the study. Exclusion criteria were patients with neurological deficit, diabetes mellitus, bladder stone, enlarged prostate & meatal stenosis.

All patients were evaluated clinically via medical history, physical examination & laboratory evaluation by doing urinalysis, urine culture & sensitivity, blood urea, serum creatinine levels, blood sugar & complete blood picture along with abdominal & pelvic ultrasonography. The urethral stricture was diagnosed primarily by performing uroflowmetry & retrograde urethrogram. However, the final diagnosis was established by urethroscopy.

The procedure was performed under general or spinal anesthesia. Patients were placed in dorsal lithotomy position & were properly draped. A 21Fr optical internal urethrotome with 0 telescope was inserted into the urethra under the guidance of a guide wire to act as a guide for accurate cutting across the stricture. The stricture was incised at 12 o'clock positions cutting through the entire fibrous tissue until the urethroscope passed easily into the urinary bladder. Normal saline (0.9%) was used for irrigation. An indwelling 16 Fr silicon urethral catheter was inserted & left for 3 days to 2 weeks depending on the length & complexity of the stricture. A prophylactic antibiotic was given prior to the procedure and continued post operatively for few days following removal of the catheter. All patients were instructed to visit the department at 1 month & 3

monthly intervals for 1 year (mean 6 months) for subjective and clinical assessment. The criteria used to assess the success of the procedure were subjective feeling of the patient regarding his urinary stream, the uroflowmetry result and appearance of urethra on retrograde urethrogram. Outcome was graded as good, fair & poor.

3. Results

This study was conducted on 75 male patients with urethral stricture; the biggest group 28 (37.3%) patients were ranging in age from 21-30 years. (Table 1)

Table 1: Age distribution of the patients with urethral stricture

age (years)	No. of patients	Percentage
16-20	18	24
21-30	28	37.3
31-40	19	25.3
41-52	10	13.3
Total	75	100

Regarding the etiological factors of stricture, 40 (53.3%) patients had history of trauma, 20 (26.6%) patients & 10 (13.3%) patients developed stricture secondary to iatrogenic injury and infection respectively, while idiopathic cause was found in only 5 (6.6%) patient as shown in (Table 2)

Table 2: Etiological factors of the urethral stricture

Etiology	No. of patients	%
Traumatic	40	53.3%
Iatrogenic	20	26.6%
Infective	10	13.3%
Idiopathic	5	6.6%
Total	75	100

The most common presenting complaint was poor urinary stream in 32 (42.6%) patients followed by dribbling of urine in 16 (21.3%) cases (Table 3).

Table (3): The presenting complaint in the patients

Presenting complaint	No. of patients	%
Poor urinary stream	32	42.6
Dribbling	16	21.3
Intermittency	10	13.3
Sense of incomplete emptying	9	12
Recurrent UTI	5	6.6
Urine retention	3	4
Total	75	100

Out of 75, 16 (21.3%) patients had stricture of penile urethra, 48 (64%) had stricture of bulbar urethra while in 11 (14.6%) cases, the stricture was prostatic membranous. (Table 4)

Table 4: Site of urethral strictures

Site	No. of patients	%
Penile	16	21.3
Bulbar	48	64
Prostatic membranous	11	14.6
Total	75	100

Overall response rate was good in 52 (69.3%) patients, fair in 15 (20%) and poor in 8 (10.6%) cases, Table (5).

Table 5: Outcome of optical urethrotomy

Result	No. of patients	Percentage
Good	52	69.3
Fair	15	20
Poor	8	10.6
Total	75	100

Immediate post operative complications included minor bleeding in 11 (14.6%) patients, only one of them needed blood transfusion, fluid extravasations in 3 (4%) patients, treated conservatively and did not require any surgical intervention. Six (8%) cases had urinary tract infections which were treated with oral antibiotics. Recurrent stricture was noted in 8 (10.6%) patients. Five of them (6.6%) were managed through re optical urethrotomy while 3 (4%) patients needed urethroplasty. Table (6)

Table 6: Postoperative complications

Complication	No. of patients	Penile	Bulbar	prostatic membranous
Bleeding	11 (14.6%)	6 (8%)	4 (5.3%)	1 (1.3%)
Fluid extravasation	3 (4%)	1 (1.3%)	2 (2.6%)	0
UTI	6 (8%)	2 (2.6%)	3 (4%)	1 (1.3%)
Recurrent stricture	8 (10.6%)	3 (4%)	3 (4%)	2 (2.6%)
Total	28 (37.3%)	12 (16%)	12 (16%)	4 (5.3%)

4. Discussion

Up to the mid 20th century, urethral dilatation and blind internal urethrotomy remained the treatment of choice for urethral strictures. Suprapubic cystostomy was the only alternative [9]. Modalities of treatment like urethral dilatation and rail road techniques are more or less obsolete because of poor efficacy and inherent complications [9, 10]. On the other hand, internal optical urethrotomy is now considered the gold standard in management of urethral stricture because of its simplicity and easy performance which leads to worldwide popularity of this procedure for treatment of urethral stricture [11].

In this study the age of the patients ranged from 16-52 years (mean 36.3 years) which was comparable to 39 years reported by Mathur M et al [3] but lower than the 46.9 years reported in two different studies by Balindi SS [10] and Meneghini A et al [12], 42.2 years by Shittu O B [4].

The traumatic etiology of stricture in our study was 53.3% followed by iatrogenic injuries in 26.6% cases. These figures were consistent with 59.2% for trauma & 27.2% for iatrogenic injuries reported by Mathur RK et al [13], Shaikh NA reported trauma in 70% cases [9]. While Younas M et al [14] reported 70% for trauma and 30% iatrogenic injuries. Rasool M et al reported 66.66% of urethral stricture due to trauma [15]. In contrast to our study Chelton et al [5] reported 11.5% traumatic stricture. The high incidence of traumatic stricture in our study was due to road traffic accidents & war injuries.

Regarding site of urethral stricture 48 (64%) of the patients in the present study were having stricture of bulbar urethra which was lower than that of Ali MN [11] reported 70 to

80% of the stricture in bulbar urethra & Younas M et al^[14] reporting 73.33% involvement of the bulbar urethra.

In our study, in 52(69.3%) patients, the response to optical urethrotomy was good while 8(10.6%) were having poor response. These were quite comparable with Holm-Nielsen et al^[16] reported success rate 77% & Pansadoro V^[8] reported 11% poor results. Table (7)

Table 7: comparison of success rate percentage with other studies

Author	Year	No. of patients	Followup (mean)	Success rate %
Chilton et al ^[5]	1983	151	5 years	50
Holm Nielsen et al ^[16]	1984	225	Not specified	77
Albers et al ^[17]	1992	937	3.9 years	62
Pansadoro et al ^[8]	1996	224	8 years	32
Steenkamp et al ^[18]	1997	101	14.4 months	77
Santucci et al ^[19]	2010	74	14 months	8
Present study	2016	75	6 months	69.3

In our series, the most common post-operative complication was bleeding noted in 14.6% which was minor bleed & stopped within 24 hours hospital stay. This figure was acceptable by comparing with other studies (Younas M^[14] & Shaikh NA^[9]) but higher than 4.4% reported by Balindi SS^[10]. The fluid extravasation occurred in 4% of our patients which was comparable to 2.5% reported by Shittu OB et al^[4]. However it resolved within 48 hours. Post-operative urinary tract infection occurred in 8% patients. This was due to indwelling catheter and responded to treatment with appropriate antibiotic. In our series, 10.6% patients developed postoperative urethral stricture.

This was consistent with 9.2% reported by Mathur RK et al^[13] but lower than that of 26.2% by Shaikh NA et al^[9]

5. Conclusion

Internal optical urethrotomy is effective, safe, repeatable and minimally invasive procedure for patients with urethral stricture.

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