Our Experience of Internal Urethrotomy in the Management of Urethral Stricture

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A prospective study was conducted in the Departments of Surgery and Urology at Bahawal Victoria hospital Bahawalpur from January, 1997 to December, 1998. A total of 45 male patients with urethral stricture were included in our study. After diagnosis, internal urethrotomy was performed under general or regional anaesthesia with the Storz-Sachse cold knife optical urethrotome. The most common cause of stricture was trauma (46.67%), followed by iatrogenic cause (35.56%). The commonest site of stricture was bulbous urethra (53.33%) followed by membranous urethra (24.44%). The length of stricture was less than 1 cm in 80% cases. Most of the patients (80%) came within 5 years of development of symptoms. Good results were obtained in 53.33% of cases, acceptable in 22.22% and poor results in 24.45% of patients. Complications noted were very minor like haematuria, extravasation and fever. We conclude that internal urethrotomy is simple, safe and effective with very low morbidity especially for strictures less than 1 cm length.
Key Words:. Stricture of urethra, internal urethrotomy,

Stricture of urethra is one of the miserable afflictions to mankind since the recorded history. In the pre-antibiotic era infection especially gonococcal urethritis was the most common cause of stricture[1]. Now a days trauma is the leading cause followed by iatrogenic factor [2]. Dilatation of stricture was used in India since 600 BC[3]. Afterwards open urethroplasty either perineal or transpubic came out but usually ended up with high morbidity[4]. Internal urethrotomy came into picture since 1974 when Sachse developed visual urethrotome for the first time[5]. It is now treatment of choice especially for strictures less than one-cm length[6].

The present study was conducted to evaluate the results of internal urethrotomy in stricture of urethra with a set protocol.

Material and Methods

The present study has been conducted from January, 1997 to December, 1998 in Departments of Surgery and Urology Bahawal Victoria Hospital Bahawalpur. Forty-five male patients have been studied prospectively to assess the role of internal urethrotomy in stricture urethra. Forty-five male patients of stricture urethra attending Surgical Unit I and Urology department Bahawal Victoria Hospital Bahawalpur regardless of age and aetiology have been included in the study. The patients with local complications (Peri-urethral abscess, fistula), enlarged prostate, meatal strictures and neurological disorders had not been included in the study.

A thorough history and complete physical examination was performed in every case. Laboratory investigations like blood complete examination, urine complete examination, serum urea, and cretinine was performed. Plain X-ray abdomen and ultrasonography was done to rule out any other pathology. Retrograde urethrography and Voiding cystourethrography was performed to see the length of stricture. Urethroscopy was done at the start of procedure.
Visual internal urethrotomy was performed with Sachse cold knife optical urethrotome. O, telescope was used. The actual procedure began with urethroscopy of the strictured urethra. When needed 4Fr ureteric catheter was passed through the side arm of urethrotome beyond the stricture into the bladder to serve as guide during cutting. Incision was made at 12 O, clock position cutting through the entire fibrous tissue until the instrument easily passed through the stricture. Irrigation was done with normal saline. The operation was performed under general anaesthesia or regional anaesthesia. The Foley's catheter was passed in each and every patient after internal urethrotomy.

Foley's catheter was left indwelling for seven days. On 8th postoperative day catheter was removed. The patients were instructed to visit every month. At each visit patient's subjective response to treatment was assessed. The follow-up was done for a period of 3 months. The results of internal urethrotomy were considered good, acceptable and poor on subjective response and clinical assessment.

Good: Patient fully satisfied, urine stream excellent and no complaint.

Acceptable: Patient satisfied, urine stream thinner than the one achieved at the time of operation.

Poor: Patient not satisfied, stream of urine poor, even dribbling.

Results

All the 45 patients included in this study were male. Age range of patients was from 11 years to 80 years with a mean age of 35 years. Maximum incidence (51.11%) of stricture was seen between the age of 11 to 30 years (Table 1).

The most common cause of uretheral stricture in this study was trauma. Twenty-one (46.67%) patients had traumatic strictures. Out of these, 12 had pelvic fracture and 9 had history of direct perineal injury. The second most common cause of stricture was iatrogenic. Eleven (24.44 %) patients developed strictures following prostatectomy and in 5 (11.11 %) patients the cause was previous catheterization. In 6 (13.33 %) patients urethritis was the cause of stricture formation. In 2 (4.44%) patients cause remained unknown.

(Table 2).

Table No.1: Age distribution of patients:

Age (years)	No of patients	%age
11-20	10	22.22
21-30	13	28.89
31-40	08	17.78
41-50	05	11.11
51-60	04	08.89
61-70	04	08.89
>70	01	02.22
n=	45	100

Table No. 2: Aetiology of strictures:

Aetiology	No of patients	%age
Trauma	21	46.67
Iatrogenic	16	35.56
Infection	06	13.33
Unknown	02	04.44
n=	45	100

The most common site of strictures was bulbous urethra (53.33%). The second most common site of strictures was membranous urethra (24.44 %). Third most common site was the multiple site strictures (15.56 %). Only 6.67% patients had strictures in penile urethra. (Table 3).

Table No. 3: Site of strictures:

Site	No. of patient	% age
Bulbous	24	53.33
Membranous	11	24.44
Multiple	07	15.56
Penile	03	06.67
n=	45	100

Nine patients (20%) presented with poor urinary stream. Twenty-four (53.33%) patients presented with dribbling of urine and 12 patients (26.67%) came with retention of urine. The duration of symptoms is shown in table 4.

Table No. 4: Duration of history of symptoms:

Duration	No. of patients	% age
Less than 1 year	16	35.56
1-5 years	20	44.44
6-10 years	04	08.89
11-15 years	03	06.67
30 years	02	04.44
n=	45	100

The results of internal urethrotomy have been based on clinical assessment and patient's subjective response. Twenty-four (53.33%) patients had good results, 10(22.22%) had acceptable results and in 11(24.45%) patients the results were poor (Table 5).

Table No.5 Overall results:

Results	No. of Patients	Percentage
Good	24	53.33
Acceptable	10	22.22
Poor	11	24.45
Total	45	100

Out of 45 patients, 36 had strictures less than 1 cm in length and 9 patients had strictures more than 1 cm long. The results in relation to length of stricture are shown in table 6.

Table No.6: Results compared to length of strictures:

Stricture Length	Good	Acceptable	Poor	n=
Less than 1 cm	22 (61.11%)	8 (22.22 %)	6(16.67 %)	36
More than 1 cm	2(22.22%)	2 (22.22 %)	5 (55.56%)	09
n=	24	10	11	45

We also evaluated the results in relation to site of stricture, as evident in table 7. The patients with multiple strictures had the most unsatisfactory results.

Table No.7 Results compared to site of urethral strictures:

Stricture Site	Good	Acceptable	Poor	n=
Bulbous	17(70.83%)	3(12.50%)	4(16.67%)	24
Membranous	4(36.36%)	5(45.45%)	2(18.18%)	11
Multiple	-	2(28.57%)	5(71.43%)	07
Penile	3(100 %)	-	-	03
n=	24	10	11	45

Iatrogenic strictures as compared to traumatic strictures had better results as shown in table 8.

Table No.8: Results compared to aetiology of stricture:

Aetiology	Good	Acceptable	Poor	n=
Iatrogenic	8(50.00%)	5(31.25%)	3(18.75%)	16
Trauma	10(47.62 %)	3(14.28%)	8(38.10%)	21
Infection	4(66.67%)	2(33.33%)	-	06
Unknown	2(100 %)	-	-	02
n=	24	10	11	45

Out of 45 patients, 8(17.78%) patients had complications. Five patients developed minor bleeding which stopped on second postoperative day after penile pressure. In 2 case there was fever which settled on 4th day with antibiotic. Extravasation of urine occurred in one patient. No serious complication was observed in the study. Epididymitis, breaking of knife, incontinence or impotence was not seen in this series.

Discussion

Urethral stricture has always been a problem for the surgeons. With time along with advancement in technology there was great development in the treatment of urethral stricture. Urethral dilatation is the oldest method even mentioned in "Ayurveda of Susruta" (great work of ancient India)[7]. It main disadvantage is that it simply disrupts the scar resulting in rescarring, moreover it carries a high complication rate[8].

The advancement in treatment of stricture urethra occurred with the development of urethrotomes in 19th century by Maisonneuve and Otis resulting in real breakthrough[3, 9,10]. The problem was that all these instrument were passed blindly into urethra and strictures were incised without visual control. Optical urethrotomy technique introduced in 1974 by Sachse brought revolution in treatment of urethral stricture[5].

Direct visual internal urethrotomy using optical urethrotome is a safe and cost effective procedure[11]. It is reasonable alternate to urethroplasty in patients with impassable short strictures and should be considered as first line of treatment for all post-traumatic posterior urethral strictures [12,13]. Hospital stay, loss of work, morbidity and related complications are also markedly decreased with this endoscopic therapy[14,15].

In our study the age range of patients was from 11 years to 80 years with mean age of 35 years. Majority (51.11%) of patients were between the age of11 to 30 years. This is contrary to Johnston et al, who reported that more than 60 % of their patients were above the age of 50 years[16]. Our series points that uretheral stricture is more common in younger age group in our country. Iqbal reported that 43 % of their patients with urethral stricture were between 15 to 35 years of age[17]. This correlates well with our series. Trauma is the most important cause of urethral stricture (46.67%) in our study, almost same as reported by Iqbal (52 %)[17]. This can be explained on the basis of high incidence of roadside accidents and poor emergency medical services in our country. Similar observations were seen in India. Mohanty and Kachroo reported 67 % incidence of traumatic strictures in their study from India[18]. In advance countries incidence of strictures due to trauma is relatively low as compared to our country due to early and advanced medical facilities. Chiltan et al, reported 11.5% traumatic strictures[19]. In advanced countries the common cause of stricture is iatrogenic. Smith et al, reported that in 51.8% of their cases the strictures were due to iatrogenic reasons[5]. In our study this was the second most common cause of urethral strictures, comprising 35.56% of total cases. In our study in 2(4.44%) cases the cause of stricture remained unknown. The reported incidence of strictures of unknown aetiology is from 3 to 31% in western literature[20].

In our study 80 % of patients presented within first 5 years of onset of symptoms. As compared to advance countries, it is an early presentation. Smith et al reported that duration of symptoms were more than 5 years in most of their patients[5]. This early presentation in our patients is probably due to the fact that majority of the patients in our study had urethral strictures due to trauma and they needed early medical advice.

Operative results of internal urethrotomy in our series were as good as reported in most of the other series. The overall success rate in our study was 75.56%, i.e. 53.33% patients had good results and in 22.22% patients the results were acceptable. Mohanty and Kachroo reported success rate of 66%, Pansadoro-V et al reported 68%, Prajsner 69.7% and Nielsen et al reported success rate of 77% in their patients of urethral stricture treated by internal urethrotomy[18, 6, 21, 22].

Period of postoperative catheterization in our study was 7 days. Catheterization period varies from less than one week to six weeks in different studies[23]. It is believed that longer period of catheter drainage allows normal urothelium to bridge the gap between edges of incised scar tissue and minimises the possibility of recurrent stricture. However Nielsen et al reported that varying periods of catheter drainage has no effect on the results of internal urethrotomy[22].

The length of stricture has inverse relation to the results as evident in our series. Nelson had reported better results when length of stricture was less than 1 cm[22]. Pansadoro-V reported 89 % good results if stricture was less than 1 cm[6]. It is clear that the results of our study coincide well with other series.

Poor results were more frequently seen in traumatic strictures (38.10%) as compared to iatrogenic strictures (18.75%). The poor results in traumatic strictures are due to the fact that the patients are initially mismanaged at the time of trauma to urethra resulting in dense fibrotic strictures, which respond poorly to internal urethrotomy. Guille-F reported that early prompt endoscopic alignment of posterior urethra at the time of complete traumatic rupture of posterior urethra is a simple rapid and non-traumatic technique. In his series out of 5 patients, after endoscopic alignment of posterior urethra, 2 recovered completely, and 3 required 1 or 2 internal urethrotomies to cure[24].

Follow-up period in our study was three months. This short follow-up period was due to two reasons: 1; poor compliance of the patients in our, society, 2; recurrence of stricture usually becomes evident within period of 3 months after internal urethrotomy[16].

In our study, the complication rate was 17.78% that is similar to complication rate reported in other studies. Goel-MC reported that 2 out of 13 patients (17 %) after internal urethrotomy developed Haematuria[12]. Graversen et al reported total or partial erectile dysfunction following internal uretherotomy in 10.6 % of patients[25]. We did not come across any patient of erectile dysfunction in our series. In our study complications noted were haematuria, extravasation and fever. Iqbal reported very high complication rate[17], which

does not coincide to our results. In our study complication rate is relatively less

Conclusion

Internal urethrotomy should be considered the first line treatment for uretheral stricture especially for patients having stricture less than 1 cm length. Hospital stay, morbidity and related complications are also markedly less with the internal urethrotomy. It should be advised because it is simple, safe and effective procedure with very low morbidity.

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