



TO DETERMINE THE RECURRENCE RATE OF STRICTURE URETHRA FOLLOWING OPTICAL URETHROTOMY IN DEPARTMENT OF UROLOGY AT PEOPLE'S MEDICAL COLLEGE HOSPITAL NAWABSHAH, A 2 YEARS' EXPERIENCE.

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ABSTRACT... To determine the recurrence rate of Stricture Urethra following Optical Urethrotomy in Department of Urology at People's Medical College Hospital Nawabshah, a 2 years' experience. **Study Design:** Prospective observational. **Setting:** Department of Urology at People's Medical College Hospital Nawabshah. **Period:** January 2016 to January 2018. **Materials and Methods:** Patients who fulfill inclusion criteria were admitted through Urology OPD. An informed consent was taken. All baseline investigations / Antegrade and Retrograde Urethrogram, Qmax in uroflowmetry, post void residual ultrasound scan were performed in all cases. The patients were asked to attend the OT after anesthetic assessment, under spinal anesthesia. They were advised to have follow-up visits with uroflowmetry and PVR. All the collected data was filled on Performa. Data was analyzed through SPSS Version 20.0. **Results:** A total of 95 patients (100 %) underwent first session of DVIU, out of 95 patients 37 patients (38.95 %) showed improvement in subjective, while remaining 58 patients (61.05%) showed deterioration. so they underwent second session of DVIU. After second session of DVIU 15 patients (25.86%) out of remaining 58 patients showed improvement, while 43 patients (74.14%) remained in agony, So I counseled them all (remaining 43 patients) for third sitting of DVIU or open urethroplasty. Out of 43 remaining patients only 23 patients willingly underwent third session of DVIU and remaining 20 patients refused and they directly underwent open end to end urethroplasty. The 23 patients, who underwent DVIU, have failed and finally they also underwent urethroplasty. **Conclusion:** The recurrence rate after DVIU has based on multiple factors that should be properly addressed during treatment planning to avoid unnecessary re treatment, to decrease the rate of more invasive open surgical procedure.

Key words: Direct Vision Internal Urethrotomy (DVIU), Maximum Flow (Qmax), Post Void Residual Urine (PVR), Urethral stricture.

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INTRODUCTION

Urethral stricture disease is as old as the history of mankind and has been described in Greek and Egyptian literature.¹ Urethral stricture basically is a scar type of fibrous tissue that lies in the sub epithelial tissue of the corpus spongiosum and when this fibrous tissue constrict ultimately the urethral lumen became narrows and produce lower urinary tract symptoms.² It is evident that scar contraction caused by anterior urethral stricture disease can be asymptomatic for a while, but because the lumen is further reduced, it can be associated with marked voiding symptoms.³

The actual incidence of stricture disease is

difficult to predict but it can be as high as 0.6% in some susceptible populations. According to data from united states and U.K, it basically affects the males, with an increasing frequency with one in every 10,000 men's aged 25 years to about one in every 1000 males aged 65 or more.⁴ National data from the Sindh Institute of Urology and Transplantation showed that stricture disease constitutes nearly about 3-4% of all urologic disease.⁵

There are many ways or methods are available to treat the stricture disease, which are simple to perform, cheap in cost and available in many centers, like dilatation and Direct Vision Internal

Urethrotomy (DVIU) which could quickly treat a lot of patients with stricture disease in the first session but the recurrence rate is as high as 40% for less than 2cm stricture and 80% for more than 4cm stricture for both procedure after 12 months follow up. In DVIU procedure cut is given through the fibrosed scar tissue with the cold knife at 12 O'clock position using an optical direct vision urethrotome.⁶

This cold knife was first invented and used by Sachse in 1974 and who many treated patients.⁷ Now, this method became a first modality and it is widely being used due to its advantages like minimal invasive, easily available and applicable with reduce hospital admission (as a day case) and easily return to daily routine in contrast with open surgical procedures. This procedure possesses a great disadvantage of recurrence of stricture which needs further surgery.⁸ In one study rate of recurrence has been reported between 25% and 89% following 1st DVIU depends on duration, number, size and location of stricture.⁹ Ali MN et al described the cure rate of stricture with repeat DVIU is up to 50% to 70% and the success rate is 80%.¹⁰

The objective of doing this study is to find out the recurrence rate of stricture urethra after optical urethrotomy, and rationale behind this is to find out the various factors that variably affect the outcome of results which leads to recurrence of disease despite the use of Gold standard options of treatment, also identifying which patients and what stricture characteristics are eligible for corrective surgery to minimize frequent patient procedures.

MATERIALS AND METHODS

Data Collection Procedure

All Patients were male having age above 18 years, complaining of lower urinary tract symptoms, all were admitted through Urology OPD. Referral cases from various surgical wards were also included. All patients were subjectively examined pre-operatively by detailed history and complete clinical examination. Patient's satisfaction from his stream and the sense of satisfactorily emptying of

bladder were the main subjective tool in pre and postoperative period. While the Uroflowmetry i.e. of urinary flow rate per second and ultrasound scan for the measurement of post-voiding residual urine volume were the main objective tools in both pre and post-operative period. Patients who fulfill inclusion criteria (single, bulbar urethral stricture, size less than 1.5cm in length) were included. Patients who fulfill exclusion criteria (Multiple strictures, strictures greater than 1.5 cm length, patient already operated for urethral stricture, neurogenic bladder, enlarged prostate, and urinary bladder stone) were not included.

The patients' demographics data were recorded, included age, associated comorbidities, and body mass index (BMI). The cause of stricture was also determined to be inflammatory if the patient had previous episodes of urethral infection or sexually transmitted disease, iatrogenic if there was history of urethral instrumentation, traumatic if there was a previous history of straddle injury, and idiopathic if there was no relevant history. For the assessment of renal function, serum creatinine was done in all those cases who presented with chronic retention of urine. To decide the length and site of stricture preoperatively antegrade and retrograde Urethrogram were done. Before surgery all patients were submitted for the anesthetic assessment. Under the spinal anesthesia optical internal urethrotomy was done with cold knife under antibiotic cover. After surgery 14 Fr Foley catheter was placed in all cases through half-moon sheath. All patients were treated as day case surgery.

Patients received antibiotics for the duration that the catheter was in situ. The catheter was left in situ for an average of 3 days. A regular follow up was established. First follow-up visit was after 15 days. Later on follow up was done on monthly basis for 3 months and then 3 monthly for 1 year in disease free patient and on monthly basis for those patients who underwent 2nd DVIU to see the recurrence of stricture disease. The same follow up pattern was followed further for 3rd DVIU/urethroplasty. The following subjective (Patient's satisfaction from his urinary symptoms and stream with sense of satisfactorily emptying

of bladder) and objective assessment (Q max in (UFM) Uroflowmetry and Post-voiding residual urine on ultrasound) was done in each follow-up visit. After the catheter removal a base line level of both these variables i.e in Uroflowmetry Q max is (>12 mls/sec) and Post-voiding residual urine (<50 cc) was set as a predictors of success. If indicated, ascending urethrography and cystoscopy were performed if there was a recurrence of obstructive symptoms, decrease Q max or obstructive uroflowmetry pattern and increasing Post-voiding residual urine on follow up visit. The primary outcome of our study was failure of DVIU, defined as decrease Q max or worsening uroflowmetry pattern and increasing Post-voiding residual urine and the need for further instrumentation, i.e. if patients required, redo DVIU, or urethroplasty.

Data Analysis Procedure

All data was entered in statistical package for social Sciences (SPSS) 20.0 version. The Variables related with recurrence rate of stricture urethra following optical urethrotomy were analyzed by drawing means, percentages & frequency tables.

The effectiveness of DVIU was determined for the quantitative and qualitative variables like pre and post-operative uroflowmetry and post voided residual urine volume.

Informed consent was taken from the patients at the time of examination; Confidentiality about their particulars was kept secret, no any force used to enroll the patient in the study to participate.

RESULTS

A total of 95 patients (100 %) were included in our study. At the time of presentation, out of 95 patients, 49 patients (51.58%) were between 18-35 years old, 29 patients (30.52%) were between 35-50 years old and the remaining 17 patients (17.89%) were between 50-65 years old. The average age was 33.37 years (Table-I). On the evaluation of 95 patients, 72 patients (75.79%) were presented with lower urinary tract symptoms, while the remaining 23 patients (24.21%) were presented with acute retention of urine and they were failed to catheterize so they

underwent suprapubic cystostomy (Table-I). On uroflowmetry of 72 patients, who presented with lower urinary tract symptoms, 44 patients (46.32%) had Q Max $10.04 + 0.99$ ml/sec and 28 patients (29.47%) had Q Max $8.27 + 0.32$ ml/sec. On physical evaluation (BMI) of total 95 patients, we found that 30 patients (31.58%) have had their BMI between 18.5 -25, 53 patients (55.79%) have had their BMI in range of 25-30 and the remaining 12 patients (12.63%) have had BMI more than 30(Table-I). The average BMI was 26.93. On Retrograde / Antegrade urethro-cystography of all 95 patients, we found that 31 patients (32.63%) have had their stricture size was up to 1 cm while the remaining 64 patients (67.37%) have had their stricture size was 1-1.5 cm of size (Table-I). The average size of stricture was 0.931 cm. During the assessment of all patients, we didn't find any specific cause of stricture in 37 patients (38.95%), while the remaining patients have had their possible aetiology of stricture (Table-II).

A total of 95 patients (100 %) underwent the first session of DVIU, out of 95 patients, 37 patients (38.95%) showed improvement in subjective as well as objective assessment, while remaining 58 patients (61.05%) showed deterioration of urinary stream both subjectively and objectively so they underwent the second session of DVIU. After second session of DVIU 15 patients (25.86%) out of 58 patients showed improvement in urinary stream, both in subjective and objective parameters, while 43 patients(74.14%) remained in agony due to poor stream, so I counselled them all (remaining 43 patients) for the third sitting of DVIU.

Out of 43 remaining patients, only 23 patients willingly underwent the third session of DVIU and remaining 20 patients refused to undergo the third session of DVIU and they directly underwent open end to end urethroplasty. The 23 patients, who willingly underwent the third session of DVIU, have failed to show the improvement and finally, they also underwent open end to end urethroplasty. All 43 patients who underwent open end to end urethroplasty were finally cured and achieved better results (Table-III).

Presentation	No of patients (N)	Percentage
Age in Years		
18-35 Years	N=49	51.58%
35-50 Years	N=29	30.52%
50-65 Years	N=17	17.89%
BMI		
18.5 - 25	N=30	31.58%
25 - 30	N=53	55.79%
> 30	N=12	12.63%
Lower urinary tract symptoms (LUTS)		
Duration Less than 1 year	N=53	55.79%
Duration More than 1 year	N=19	20%
PVR Volume 150-250 ml	N=72	75.79%
Acute Retention of urine	N=23	24.21%
Suprapubic Cystostomy	N=23	24.21%
PVR Volume > 400 ml	N=23	24.21%
Q Max (uroflowmetry)		
Q Max 10.04 ± 0.99 ml/ sec	N=44	46.32%
Q Max 8.27 ± 0.32 ml/ sec	N=28	29.47%
Nil/Zero QMAX	N=23	24.21%
Size of Stricture		
Up to 1 cm	N=31	32.63%
1 to 1.5 cm	N=64	67.37%

Table-I. Presentation of patients

Total Patients according to Stricture Etiology		
Etiology	No of patients	Percentage
Idiopathic	37	38.95%
Iatrogenic	33	34.73%
Traumatic	15	15.79%
Infection/ Inflammation	10	10.53%
Total	95	100%

Table-II. Total patients according to stricture etiology during assessment

Procedure	Number of Patient N	Recurrence Rate %	Success Rate
1 st DVIU	N=95	61.05% (n=58)	38.95% (n=37)
2 nd DVIU	N= 58	74.14% (n=43)	25.86% (n=15)
3 rd DVIU	N=23	100% (n=23)	0%
Urethroplasty	N =43 (20+23)	0%	100% (n=43)
Size of Stricture 1 cm	N =31	32.26% (n=10)	67.74% (n=21)
Size of Stricture 1 – 1.5 cm	N =64	39.06% (n=25)	60.93% (n=39)

Table-III. Recurrence and success rate after DVIU

A total of 23 patients who underwent 3rd session of DVIU were followed for a period of successive three months and declared failed at 11th month (3 month after 3rd DVIU). A total of 43 patients underwent open urethroplasty (23 patients after third sitting of failed DVIU and 20 patients who refused third sitting of DVIU).

DISCUSSION

Stricture urethra is a common Surgical problem in men, especially in underdeveloped countries with a significant morbidity and also associated with disturbed quality of life.

The advent of optical urethrotomy has reported the confidence of many urologists who would otherwise have had reservations about the prospects regarding the management of urethral stricture. optical internal urethrotomy is now an established procedure of choice.¹¹

The lowest stricture free rate (8.3%) and success rate (12.1%) were observed in the past by Waleed al Taweel et al. They have followed these patients for 10 months (range 2-36) and they had included the wide length of stricture from 1 to 4 cm in their study of DVIU and probably this wide range of stricture size in their study was responsible for lowest success rate.¹²

It had been observed that if stricture did not recur in first three months after the DVIU or urethral dilatation then their stricture free rate took higher numbers about 55-60 % at 2 years follow up and about 50-60% on 4 years follow up. In earlier 1991, a comparative study between dilatation and DVIU by C F Heyns et al,¹³ they have followed the patients with stricture up to 4 years and they performed repeated procedures (up to three in number) after recurrence and had found the stricture free rate of 60% after first procedure, 40% after second, and 0% after third procedure on successive follow up at 2 years. On further follow up of these patients the stricture free rate was in the declined plane and about 50% after the first procedure, 40% after second procedure and almost total failure after the third repeated procedure were observed at 4 years follow up.

Unfortunately repeated DVIU is associated with more complexity and render the patient away from curative procedure.¹⁴ The repeated attempts of DVIU dropped the success rate with significantly lower outcome.¹⁵

Lindsay A. Hampson et al's analysis showed that the predictors of failure are previous DVIU, other location besides bulbar, more than 2cm size, UTI at the time of DVIU, and periurethral fibrosis, so the proper patient selection, follow up assessment on long-term basis, and ways of determining success and recurrence rate are all that variable effect the results and gave the success rate varies widely 8-80%.¹⁶ Repeated DVIU is not clinically and costs effective, the long-term success rate is estimated to be 20-30%.¹⁷

In our study the success rate after first DVIU was 38.95% (n=37) with recurrence rate was 61.05% (n=58) in the initial 1st 3 Months follow up. We also experienced 25.86% (n=15) of success rate after the 2nd session of DVIU and about 74.4% (n=43) of stricture recurrence rate in successive follow up and almost 100% recurrence rate after a 3rd session of DVIU.

Stricture recurrence showed to be directly proportional to stricture length, increasing stricture length mean higher recurrence rate for stricture. Pansadoro et al¹⁸ demonstrated high recurrence rate for stricture greater than 1.0cm, In their study, the success rate was 71% for strictures shorter than 1.0cm compared to 18% for longer strictures. AA. Zehri et al¹⁹ concluded that recurrence rate after DVIU or dilatation is lower in short length bulbar stricture as compared to long length penile stricture with periurethral scarring. Steen Kamp et al²⁰ showed that stricture < 1.0cm and 1-2cm in length have similar recurrence rate, approximately 40%.

In our study, the size of stricture has a remarkable effect on success and recurrent rate after the 1st session of first DVIU. We have achieved a success rate of 67.74% (21 Patients) with stricture size 1.0cm and recurrence rate of 32.26%(P=0.10, n=10) in the same size of strictures. The success rate has decreased to 60.93% (39 Patients) with

stricture size 1-1.5cm and recurrence rate has increased to 39.06% (25 Patients) when stricture size increased to 1-1.5cm.

Concerning regarding the demographic data of all enrolled patients in our study like Age of patients, and BMI at presentation, it is found that older age is associated with increased risk of comorbidities and average nutritional status and both factors are associated with decreased wound healing and favour's recurrence of the stricture. Ahmed M. Harraz et al²¹ concluded that older age, obesity and idiopathic etiology, all individually and collectively increased the failure rate up to 41.8%.

In our study, 17.89% of patients were older than 50 years of age and we found the recurrence of stricture is more common in that population.

The relationship between obesity and stricture should be considered for the association with recurrence. Liaw A, Rickborn L et al,²² in their research study hypothesize that patient with buried penis due to obesity have a higher rate of urethral stricture disease and lichen sclerosis than the general population, and because of comorbidities associated with obesity the stricture management is a challenging task in evaluation and treatment phases. As patients with increasing BMI or obesity are more prone to cardiovascular and postoperative complications, a minimally invasive technique of procedure is more acceptable to these patients. Ahmed M. Harraz et al²¹ observed the recurrence rate of about 50.5% in patients with BMI >30. In our study, increased BMI was linked to recurrence rate. We treated 12.63% patients (n=12) with BMI more than 30 and found that failure rate was more in a patient with High BMI so obesity may have the relationship with the recurrence of stricture urethra. In our study out of 12 obese patients with BMI > 30, 58.33% (P=0.10) of patients (n=7) underwent urethroplasty after the failure of DVIU.

The way of presentation of patients to us was variable. From long-standing lower urinary tract symptoms to sudden acute retention of urine with also the history of failed catheterization after

multiple attempts with suprapubic cystostomy as the urinary diversion before definitive measure. K Rourke et al²³ worked on presentation of stricture disease, they reported that LUTS and acute urinary retention were the most common in 54.3% and 23.4% patients respectively, while symptoms were reported in 22.3%.

In our study 75.79% (72 patients) presented with lower urinary tract symptoms of variable duration from few months to more than one year and 24.21% (23 Patients) presented with sudden acute retention of urine, they underwent suprapubic cystostomy.

Complication after DVIU (excluding recurrence) was small in number in our experience like Extravasations in 8.41% of cases (n=8), urethral Bleeding in 9.41% of cases (n=9), Epididymo-orchitis is in 4.21% of cases (n=4). We treated all above mention complication as indoor patient with good hydration, antibiotics (according to culture and sensitivity), scrotal support, injectable Transamine.

Since the Natural history of urethral stricture is measured in decades, not months or a few years, longer follow-up is necessary to show whether our satisfactory results will prove durable. We suggest that DVIU should be offered to patients with suitable anterior urethral stricture because it is safe and clinically effective in short-term follow-up. If patients do not respond to multiple sessions of DVIU (at least 2 sessions) that open reconstruction should be offered.

CONCLUSION

Despite the variable effect of recurrence rate of stricture disease after the DVIU, it is still the gold standard for the short, single, non-complicated bulbar urethral stricture disease without spongiofibrosis. The recurrence rate after DVIU has based on multiple factors that should be properly addressed during treatment planning.

RECOMMENDATION

Continuous medical education should be given to all physicians, surgeons, doctors and Paramedical staffs all over the country, to adopt due care and follow guideline during Foley catheter placement

and its further care.


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