

A COMPARATIVE STUDY OF OPTICAL INTERNAL URETHROTOMY ALONE WITH OPTICAL INTERNAL URETHROTOMY PLUS STEROID FOR ANTERIOR URETHRAL STRICTURE DISEASE

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ABSTRACT

BACKGROUND

Urethral stricture is a relatively common urological disorder, which every urologist encounters in his regular urological practice. They pose a significant problem from both clinical and economic point of view. The aetiology of stricture of urethra has changed over time. Trauma has taken over infection as the commonest cause. The management of stricture also has evolved over the times. Despite the availability of various options for the treatment of stricture urethra, internal urethrotomy has remained a popular option among the urologists in view of its simplicity, safety and shorter learning curve.

Aims and Objectives- To compare the outcome of optical internal urethrotomy between OIU alone and OIU with steroid injection at the site of stricture by means of recurrence rate and time duration for recurrence and symptom improvement in stricture patients.

MATERIALS AND METHODS

This is a prospective, randomised, controlled study by which comparing the outcome of optical internal urethrotomy alone with urethrotomy with steroid injection in the management of stricture disease in males is done. The study done during the period of January 2016 and December 2016 at Kilpauk Medical College Hospital and Government Royapettah Hospital, Chennai.

RESULTS

In first three months, there was no recurrence in both groups. In OIU group alone, in 6th month, 3 patients came with recurrence, 4 patients came in 9th month, 2 patients came in 12th month and in 15th month totally 11 patients (36.6%). In OIU plus steroid group 1 patient came with recurrence in 12th month and 3 patients in 15th month, totally 4 patients (13.3%). The p-value was < 0.05, which was statistically significant difference. The most common age group in both Group A and B was 41 to 50; Group A was 43.3% and in Group B was 50%. Comorbidities were almost similar in both groups. DM in Group A was 23.3% and in Group B was 30%. HT in Group A was 36.6% and in Group B was 26.6%.

CONCLUSION

The clinical decision of stricture-recurrence-prevention techniques should be carefully tailored to every individual patient. Steroid injection to the stricture site to avoid fibrosis is a safe and effective adjuvant therapy. No complications were noted due to the steroid injections. Despite the benefits of these materials, steroids comes on top due to its cost effectiveness, lower side effects and also widespread usage in general medicine.

KEY WORDS

Optical Internal Urethrotomy, Urethral Stricture.

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BACKGROUND

Urethral stricture in the male still presents as one of the most common and challenging problems to the urologist. Treatment options include dilatation, endoscopic internal urethrotomy and urethroplasty. Optical internal urethrotomy followed by intermittent self-dilatation is the most commonly performed intervention for urethral stricture disease.^[1] The optical internal urethrotomy offers faster recovery, less risk of infection and is minimally invasive.^[2,3] The aetiology of stricture urethra has changed over times.

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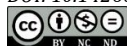
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Trauma has taken over infection as the commonest cause. The trauma can be either External (Trauma) or Internal (Instrumentation). Another important cause is Balanitis Xerotica Obliterans, also known as Lichen Sclerosus. In a small group of patients, no particular cause can be made out and they are grouped under 'idiopathic.' Optical Internal Urethrotomy (OIU) is best suited for single bulbar strictures, shorter than 2 cms^[4,5] with minimal spongiofibrosis and with no past internal urethrotomy. Optical Internal Urethrotomy (OIU) may be contraindicated in suspected urethral malignancy, coagulation disorders or active infection. Optical Internal Urethrotomy (OIU) is not suited for long strictures (>2 cms), multiple strictures, previous optical internal urethrotomy (OIU) and strictures other than bulbar.

Aim of the Study

To compare the outcome of optical internal urethrotomy between OIU alone and OIU with steroid injection at the site of stricture by means of recurrence rate and time duration for recurrence and symptom improvement in stricture patients.

MATERIALS AND METHODS

This is a prospective, randomised, controlled study by which comparing the outcome of optical internal urethrotomy alone with urethrotomy with steroid injection in the management of stricture disease in males. The study was done between the period of January 2016 and December 2016 at Kilpauk Medical College Hospital and Government Royapettah Hospital, Chennai.

Totally, 60 patients were included in this study between the age group of 30 and 60 years of age. The sample size was taken as per our convenience. The patients were randomised into two groups using computer generated random numbers table. The same surgeons have done all the procedures in both groups. Group A underwent optical internal urethrotomy alone and for Group B optical internal urethrotomy with methylprednisolone injection was injected at the site of stricture.

Inclusion Criteria

- Symptomatic anterior urethral (bulbar) stricture < 2 cm.
- Partially obliterated anterior urethral stricture.
- Patients who are willing and compliant for the study.

Exclusion Criteria

Patients with neurological deficit, bladder stone, enlarged prostate and meatal stenosis, complete obliteration of the bulbar urethra, multiple stricture or previous urethroplasty.

Methodology

Informed consent. Randomised into Group A and B based on simple random sampling method-

Group A

30 patients underwent OIU alone.

Group B

30 patients underwent OIU + methylprednisolone injection at the site of stricture.

The procedure was performed under general or spinal anaesthesia. Patients were placed in lithotomy position. A 21Fr optical internal urethrotomy with 0 degree telescope was introduced into the urethra under the guidance of a guidewire 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.

After doing OIU 40 mg of methylprednisolone was injected with 3.7 fr 37 cm needle at the site of stricture submucosally in Group B patients.

All patients were followed up for 15 months based on history, examination, uroflowmetry at 3 months interval and ascending urethrogram at 6 months interval.

Recurrence defined as patient complaining of strain to void and uroflow shows Q-max < 10 mL/sec and AUG shows narrowing in the bulbar urethra.

Results on categorical measurements are presented in percentage. Chi-square test has been used to find the significance of study parameters on categorical scale between two groups. Student's 't' test has been used to determine the significance between two group means. All analyses were two

tailed and p < 0.05 was considered significant. SPSS version 16.0 was used for data analysis.

RESULTS

Sl. No.	Age Group	Group A	Group B
1	30 - 40	8 (26.6%)	7 (23.3%)
2	41 - 50	13 (43.3%)	15 (50%)
3	51 - 60	9 (30%)	8 (26.6%)

Table 1. Age Distribution

The most common age group in both Group A and B is 41 to 50.

Group	No. of Patients	Mean Age in Years	Standard Deviation
Group A	30	44.33	8.02725
Group B	30	43.87	8.62128

Table 2

When statistically compared for age in both the groups, the p-value is 0.8290 which is statistically insignificant. Hence, both groups were comparable with regarding to age.

Group	No. of Patients	Group A	Group B	P value
Diabetes Mellitus	16	7(23.3%)	9 (30%)	0.7720
Hypertension	19	11 (36.6%)	8 (26.6%)	0.6544

Table 3. Co-Morbidities

Comorbidities are almost similar in both groups. DM in Group A was 23.3% and in Group B was 30%. HT in Group A was 36.6% and in Group B was 26.6%.

The two groups were statistically comparable with regarding to age and comorbidities.

In our study out of 30 patients who underwent OIU alone, 11 patients had recurrent stricture disease. In OIU with steroid group, only 4 patients had recurrent stricture out of 30 patients. Early recurrence is more common in Group A patients. In Group B patients, the recurrence rate is very low and the period for recurrence is also prolonged.

Recurrence	OIU	OIU + Steroids
3 Months	NIL	NIL
6 Months	3	NIL
9 Months	4	NIL
12 Months	2	1
15 Months	2	3
Total	11 (36.6%)	4 (13.3%)

Table 4

First three months, there was no recurrence in both groups.

In OIU alone group in 6th month 3 patients came with recurrence, 4 patients in 9th month, 2 patients in 12th month and 15th month totally in 11 patients (36.6%).

In OIU plus steroid group, one patient came with recurrence in 12th month and 3 patients in 15th month. Totally, 4 patients (13.3%). The p-value is < 0.05, which was the statistically significant difference.

The most common age group in both Group A and B was 41 to 50 and Group A was 43.3% and in Group B was 50%.

Comorbidities are almost similar in both groups. DM in Group A was 23.3% and in Group B was 30%. HT in Group A was 36.6% and in Group B was 26.6%.

DISCUSSION

Urethral stricture is a well-known disease that has been known for centuries. Difficulty on managing urethral strictures is its tendency to recur. First leading cause of urethral strictures was infection, but even with development of mankind and technologies iatrogenic instrumentations and external trauma take the lead. The actual incidence of urethral strictures developed after the transurethral resection of prostate of 2% - 10% as well as radical (8.4%) and simple (1.9%) prostatectomies (2 - 4). There are many treatment modalities as dilatation, endoscopic urethrotomy, stent placement and urethroplasty. Internal urethrotomy (IU) and dilatation are widely used for urethral strictures less than 2 cm with a success rate of 70%, but also have a high rate of stricture recurrence.^[6,7] Although, open urethroplasty is a highly successful and durable treatment method, surgeons do not perform it so often due to its invasiveness, longer catheterisation requirement and need of experienced surgery skills. The recurrence of stricture occurs as a result of scar that forms into the urethral epithelium and decreases the calibre of urethra.^[8,9] There are many investigations about use of drugs such as steroids, Mitomycin C, Hyaluronidase to avoid this scar or keloid formation.^[10,11] We aimed to investigate the combination of steroid injection with IU in order to avoid the recurrence of strictures and cure the patient with minimally invasive treatment.

Internal urethrotomy is a safe first line treatment for urethral strictures, independent of aetiology and location with an overall primary success rate of 60% - 70%. Endoscopic treatment is recommended before various forms of urethroplasty. Ho: YAG laser urethrotomy is a safe and effective minimally invasive therapeutic modality for urethral stricture with results comparable to those of conventional urethrotomy.^[12,13]

In intervention for recurrent urethral stricture holmium laser treatment is safe and effective. Application of steroid at time of urethrotomy produces better result than urethrotomy alone.^[14,15] Mitomycin C is useful in delaying the healing process by preventing replication of fibroblasts and epithelial cells and inhibiting collagen synthesis. It is also proposed that it can delay wound contraction.^[16] Hyaluronidase instillation during OIU may decrease the incidence of urethral stricture recurrence. Intralesional injection decreases fibroblast proliferation, collagen and glycosaminoglycan synthesis and suppresses pro-inflammatory mediators in wound healing process.^[17]

The main problem of urologists in relation to the urethral stricture disease is not the disease itself, but its nature of recurrence.^[18] Optical internal urethrotomy is a minimally invasive and repeatable procedure with varying success rates, but not as good as urethroplasty. Open urethroplasty has better results if performed at early stage, but recurrent OIU decreases the success rate of urethroplasty.^[8,9] The main pathogenesis of stricture is the fibrosis formation caused by excessive collagen synthesis and changes in the extracellular matrix of the urethral lumen due to the endoscopic

instrumentation, trauma and infections. Spongiofibrosis occurs in varying degrees and narrows the urethral lumen so that there are some ideas to treating the fibrosis with antifibrotic agents such as hyaluronidase, mitomycin C, bitoxin A,^[19] captopril,^[20] docetaxel,^[21] somatostatin analogues^[22] and steroids. There are many studies that have come with OIU along with injection triamcinolone. With varying success rate, we have done this study with injection methylprednisolone. In this study, we observed that steroid injection decreases the recurrence rate and also prolonged the recurrence time significantly.

In addition to that, we removed the catheter at 5th day after surgery.

Limitation

In the present study the sample size is small, because of short study period.

CONCLUSION

The clinical decision of stricture-recurrence-prevention techniques should be carefully tailored to every individual patient. Steroid injection to the stricture site to avoid fibrosis is a safe and effective adjuvant therapy. No complications were noted due to the steroid injections. Despite the benefits of these materials, steroids comes on top due to its cost effectiveness, lower side effects and also widespread usage in general medicine. Methylprednisolone injection during internal urethrotomy may decrease the recurrence rate significantly. As the course of urethral stricture recurrence is rather long spreading over many years, further comparative studies with longer follow-ups are required to accurately evaluate the effect of steroid injection.

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