

Original Research Article

Study of treatment options in stricture urethra management and success rate in different types and sites of stricture

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ABSTRACT

Background: A urethral stricture is a scar of the subepithelial tissue of the corpus spongiosum that constricts the urethral lumen. As the constriction progresses, obstruction develops and leads to symptoms either directly related to the obstruction or as a secondary consequence.

Methods: All the cases of stricture urethra presented to our institute between June 2017 to June 2019 (n=60) in whom treatment was required were studied in a prospective manner. All cases of obstructive voiding symptoms are evaluated by conducting uroflowmetry studies (ESPON, gravimetric type). Obstructive voiding symptoms are evaluated by using the American Urological Association questionnaire.

Results: The data collected was divided into 3 groups: infective causes of stricture (n=22), traumatic causes of stricture (n=14) and idiopathic causes of stricture (n=24). The mean age of presentation was 34.4 years (range of 20 to 50 years). 18 (30.00%) patients had stricture in the bulbo-urethra, 12 (20.00%) at the external meatus, 4 patients had stricture at the bulbo-membranous region. Procedures undertaken during the study were visual internal urethrotomy in 20, anastomotic urethroplasty in 17 patients and Augmented urethroplasty in 23 patients. In our series of 60 patients, 48 patients had a Qmax of >15 ml/sec. Average success rate was 80.1%, 12 patients had a Qmax of <15 ml/sec.

Conclusions: It is unwise to make sweeping recommendations for best practice for reconstructive urethral surgery based on the literature because each patient clearly requires an individualized approach based on individual circumstances. Buccal mucosa is the most widely used graft has excellent results in all types of urethroplasty.

Keywords: Buccal mucosal graft, Stricture, Urethroplasty, Urethrotomy

INTRODUCTION

A urethral stricture is a scar of the subepithelial tissue of the corpus spongiosum that constricts the urethral lumen, As the constriction progresses, obstruction develops and leads to symptoms either directly related to the obstruction or as a secondary consequence.¹ By consensus, the term stricture is applied only to constrictions of the anterior urethra, which is that part surrounded by the corpus spongiosum and that runs from its origin from the membranous urethra at the level of the perineal membrane to the external urinary meatus.²

Elsewhere in the urethra the terms stenosis or contracture are preferred.³

The aim of this study is to study the treatment options in stricture urethra management and success rate in different types and sites of stricture.

METHODS

This is a prospective study conducted at Katuri Medical College, Guntur, Andhra Pradesh between June 2017 to June 2019. 60 patients were included in this study. All the

patients included in the study were divided into three groups after the inclusion and exclusion criteria were met.

Inclusion criteria

All cases of urethral stricture which need intervention are included in this study.

Exclusion criteria

Vesico-urethral distraction injuries, children, medically unfit cases, orthopaedic injuries resulting in permanent disability, hypospadiac strictures, complicated strictures with urethro-cutaneous fistula were excluded.

Institute Ethics committee approval was obtained for conduction of the study and the patient’s consent was taken before surgery. All cases of obstructive voiding symptoms are evaluated by conducting uroflowmetry studies (ESPON, gravimetric type). Obstructive voiding symptoms are evaluated by using the American Urological Association questionnaire. Procedures undertaken during the study are visual internal urethrotomy (VIU) in 20 patients, anastomotic urethroplasty in 17 patients and Augmented urethroplasty in 23 patients. The patients were discharged after 1 week to 10 days of surgery. The per-urethral catheter was left insitu for 6 weeks. Few patients had Supra-pubic catheter which was left insitu for 4 to 6 weeks. Median follow up of the patients was upto 3 to 6 months.

After the completion of the study, Statistical analysis was performed using SPSS version 15.0 (SPSS Inc., Chicago, IL) and presented in number and percentages.

RESULTS

The data collected was divided into 3 groups I1. Infective causes of stricture (n=22) 2. Traumatic causes of stricture (n=14) and 3. Idiopathic causes of stricture (n=24). The 3 groups of patients were followed, and the outcome was measured (Table 1).

Table 1: Cause of urethral stricture.

Name	No. of patients	%
Infective	22	36.66
Traumatic	14	23.33
Idiopathic	24	40.00

The mean age of presentation was 34.4 years (range of 20 – 50 years) (Figure 1).

In our study, out of 60 patients, 18 (30.00%) patients had stricture in the bulbourethra, 12 (20.00%) at the external meatus, 4 patients had stricture at the bulbomembranous region (Table 2).

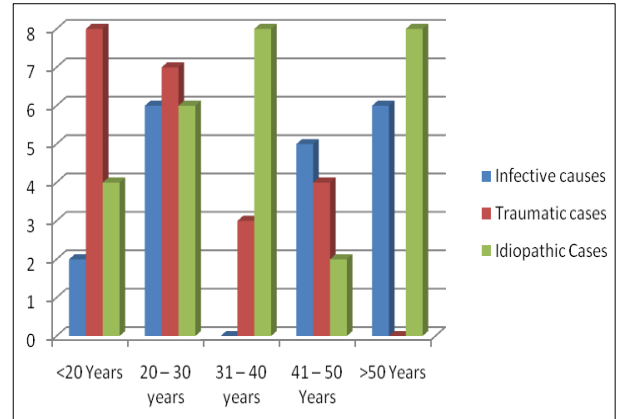


Figure 1: Age of presentation of stricture.

Table 2: Location of stricture.

Location	No. of patients	%
External meatus	12	20.00
Penile urethra	16	26.66
Bulbar urethra	18	30.66
Bulbomembranous region	4	6.66

Procedures undertaken during the study are VIU in 20 patients, anastomotic urethroplasty in 17 patients and augmented urethroplasty in 23 patients.

Median follow up of the patients was 3 to 6 months respectively with uroflowmetry and urethrography.

The end point was based on the patients with flow rate - Qmax of >15 ml/sec, patients not requiring any follow up intervention and patients not requiring any self-dilatation.

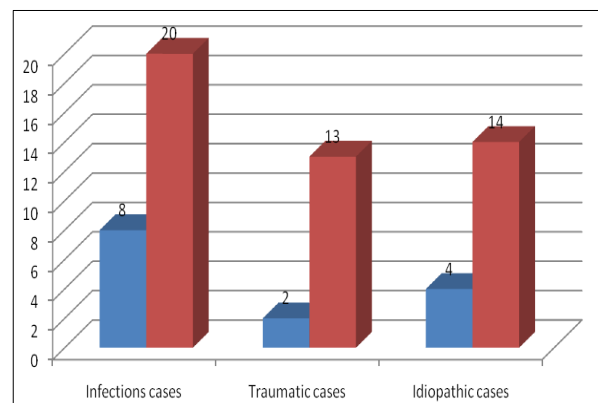


Figure 2: End point distribution.

In our series of 60 patients, 48 patients had a Qmax of >15 ml/sec. Average success rate was 80.1%. 12 patients had a Qmax of <15 ml/sec. Out of 60 patients, 4 patients who underwent visual urethrotomy required 2nd VIU. 2 patients required re-do end to end urethroplasty.

DISCUSSION

Consider a stricture as a cause of obstructive lower urinary tract symptoms in a man aged less than 65 years.¹ Get a symptom score completed and a flow rate study at the first visit - ideally with an ultrasound assessment of bladder wall thickness and residual urine.² If a retrograde urethrogram or a flexible cystoscopy can be done at that same consultation then do so, in that order of preference.²

If the definitive investigation has to be arranged subsequently then arrange a retrograde urethrogram with a voiding cystogram. If the bladder ultrasound was abnormal the upper urinary tract structure and renal function should be assessed.³ In the absence of complications treatment is for symptoms not for the results of the flow rate study or imaging.³

DVIU or dilatation are potentially curative in the first-time treatment of a short sharp bulbar stricture <1 cm. The procedure should be carried out under antibiotic cover and a catheter should be left in for 3 days afterwards. A guidewire should be used for direct vision internal urethrotomy DVIU.⁴

In the presence of co-morbidities or in a patient who is happy to be palliated, occasional dilatation or DVIU are acceptable. Dilatation is preferable for meatal strictures and sphincter strictures and 'easy' strictures which can be treated in an office setting.⁶ Self-catheterisation or dilatation may have a role in palliation but is not curative.⁵ There is no role for stents in cure or palliation. Urethroplasty is the only curative option currently available for the treatment of recurrent bulbar strictures and for all other anterior urethral strictures whether or not they have been treated previously.⁸

Short strictures of the bulbar urethra may be amenable to excision and end-to-end anastomosis, with or without augmentation.⁶ Longer strictures of the bulbar urethra are best treated by a stricturotomy and patch procedure, using a buccal mucosal graft in most circumstances.⁷ Penile strictures of any length require a substitution urethroplasty in one or two stages depending on the length and the nature and severity of the underlying problem and the effects of previous surgery.⁹

Critical factors in (potentially) staged penile urethroplasty are: an adequate glans cleft; a (buccal mucosal) graft of adequate length and breadth; a layered closure including an adequate dartos layer; and careful haemostasis and infection control. Genital skin should not be used for the repair of strictures due to lichen sclerosus.⁷ Urethroplasty should be carried out in specialist centres.

Barbagli et al in his services of 217 patients retrospectively reviewed the cause of stricture urethra.¹⁰ According to his studies the leading causes are Balanitis Xerotica Obliterans (BXO), followed by inflammatory and traumatic causes.¹ Kulkarni et al in his series of 190

patients, described lichen sclerosus as the leading cause of stricture urethra formation.¹² McMilan et al in his studies of stricture urethra identified that most patients in the age of >65 years had infective and idiopathic causes of stricture.⁴

In our study leading causes were infective and idiopathic in nature. 8 (13.33%) patients were <20 years of age, who had traumatic etiology. The mean age of presentation was 34.4 years (range of 20 to 50 years)

In our study, out of 60 patients, 18 (30.00%) patients had stricture in the bulbourethra, 12 (20.00%) at the external meatus, 4 patients had stricture at the bulbo-membranous region. Most of the published literature relates to bulbar urethroplasty. Barbagli et al described dorsal onlay graft for augmentation in 1996.¹⁰

Success rate of dorsal onlay urethroplasty is 88.84% in most series.¹

A number of different grafts have been used, with oral (buccal) mucosa grafts, used most frequently. Median follow up of the patients was 3 to 6 months respectively with uroflowmetry and urethrography. The End point was based on the following criteria:

Patients with flow rate Qmax of >15 ml/sec, Patients not requiring any follow up intervention, Patients not requiring any self-dilatation.⁹ In our series of 60 patients, 48 patients had a Qmax of >15 ml/sec. Average success rate was 80.1%, 12 patients had a QMax of <15 ml/sec.

Out of 60 patients, 4 patients who underwent visual urethrotomy required 2nd VIU, 2 patients required redo end to end urethroplasty.

Barbagli et al in his services followed up the patients (52) for 42 months. Success rate of 83% was observed. Need for instrumentation was defined as failure.¹⁰

O'Riordan et al followed up the patients for 34 months. Success rate of 86% was observed in his series. Any kind of instrumentation was defined as failure.¹¹

Kulkarni et al in his series of 88 patients had a success rate of 82%. Qmax <15 ml/sec and the need for instrumentation was defined as failure.¹²

CONCLUSION

It is unwise to make sweeping recommendations for best practice for reconstructive urethral surgery based on the literature because each patient clearly requires an individualized approach based on individual circumstances.

Buccal mucosa is the most widely used graft has excellent results in all types of urethroplasty. The follow up post urethroplasty varies a great deal between studies.

Qmax >15 ml/sec and non-requirement for any instrumentation were taken as predictors of success.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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