

Clinical Presentation and Management of Urethral Strictures: A Retrospective Study

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Abstract

Introduction: Male urethral stricture (US) disease is a common condition which results in narrowing or obliteration of the urethral lumen and may involve any segment of the urethra from the urethral meatus to the bladder neck.

Aim: This study aims to study the clinical presentation and management of US.

Materials and Methods: In this retrospective study, 200 patient's data were analyzed. Stricture characteristics, investigations, treatment, and complications were recorded.

Results: In this study, 190 (95%) males and 10 (5%) females were included in the study. The mean age of onset of USs was 51 ± 7.28 years. The most common site of the occurrence of male US was the bulbar urethra (80 patients). Endoscopy optical internal urethrotomy was done in 60 patients and dilatation was done in 40 patients and 30 patients needed buccal mucosal graft.

Conclusion: The US is a common disease that accounts for a considerable amount of morbidity and cost to the health-care system. Proper diagnosis and repair of the strictures are essential along with the appropriate imaging modality to prevent the risk of renal failure and to reduce morbidity.

Key words: Management, Stricture, Urethra

INTRODUCTION

Urethral stricture (US) is the narrowing of the urethra, the canal that carries urine from the bladder through the penis and through the urethral meatus (opening at the tip of the penis). The US can be caused by an infection, instrumentation, injury, or non-infectious urethritis.^[1] USs profoundly impact the quality of life and result in bladder calculi, infections, fistula, sepsis, and even renal failure. The incidence of USs is estimated to be 200–1200 cases per 100,000 people and the incidence sharply increases in men >55 years of age. Female USs usually occur in postmenopausal age group due to hormone deficiency (distal urethral stenosis). Untreated USs can end up in a variety of complications such as thick-walled trabeculated

bladder (85% incidence), acute retention (60%), prostatitis (50%), epididymo-orchitis (25%), periurethral abscess (15%), and bladder or urethral stones (10%).^[2]

Strictures can be divided into anterior and posterior types, which differ in their location as well as pathogenesis. In a retrospective study of strictures, it was found that 92.2% were anterior strictures with 46.9% occurrence in the bulbar urethra and 30.5% occurrence in the penile urethra. About 9.9% of them were both penile and bulbar strictures while 4.9% were pan-USs.^[3] US is characterized by changes in the extracellular matrix of urethral spongiosal tissue.^[4] Normal connective tissue is replaced by dense fibers and there is a decrease in the ratio of Type III to Type I collagen.^[5] The terms US and urethral stenosis are both different. Stricture is used to define the narrowing of the urethral lumen that is surrounded by corpus spongiosum that is the urethral meatus through the bulbar urethra, whereas urethral stenosis is the narrowing of the posterior urethra due to trauma which is not enveloped by corpus spongiosum that is the membranous urethra through the bladder neck/prostate junction. As most of the affected patients are of the younger age group, this disease has a significant

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amount of life ramifications compared to other urological diseases.^[6] Apart from a compromise in the quality of life, USs also impose significant treatment expenditure to the patients.

Aim

This study aims to study the clinical presentation and management of US.

MATERIALS AND METHODS

This retrospective study was conducted in the Department of Urology at Tirunelveli Medical College Hospital for 3 years from 2015 to 2018. Patients diagnosed with US disease were included in the study. Patient's details were collected such as age, gender, stricture characteristics, investigations, treatment, and complications which were recorded. The data were presented as frequency and percentage.

RESULTS

A total of 200 patients were observed, of which 190 (95%) were male and 10 (5%) were female [Figure 1]. The mean age of onset of USs was 51 ± 7.28 years and a higher incidence (42%) was noticed in the 25–35 years age group. This concurs with the fact that US is more common in young males. The primary cause of US was observed to be post-inflammatory (77.5%) and the rest 22.5% were due to trauma [Figure 2]. The most common site of the occurrence of male US was the bulbar urethra (80 patients) followed by membranous urethra (60 patients) and penile urethra (35 patients). Ten patients had prostatic US and one was in the fossa navicularis [Figure 3]. These findings are also in accordance with literature. Regarding treatment of US, around 70 patients needed excision and anastomosis of the strictured urethra. Endoscopy optical internal urethrotomy was done in 60 patients and dilatation was done in 40 patients and 30 patients needed buccal mucosal graft [Figure 4]. No significant complication was observed in this study, but 20 patients had recurrence, 15 had infection, and 10 had bleeding postsurgically [Figure 5].

DISCUSSION

The prevalence of US in younger men is 200 in 100,000 and >600 in 100,000 in older men according to an estimate by the United States.^[2] The incidence was 0.9% in 2001 according to the data by Medicare with increasing incidence after 65 years of age.^[7] The etiology of USs can be iatrogenic, idiopathic, inflammatory (gonorrhoea or lichen sclerosus), or traumatic.^[8] Idiopathic and iatrogenically induced USs

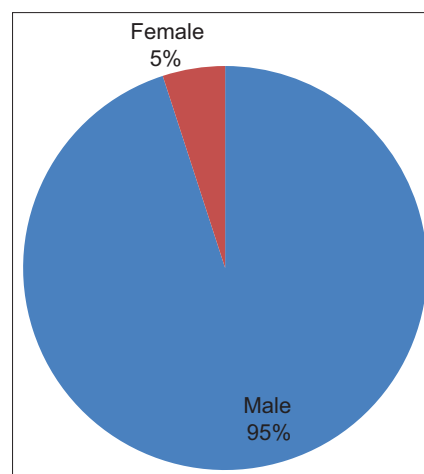


Figure 1: Gender incidence of urethral strictures

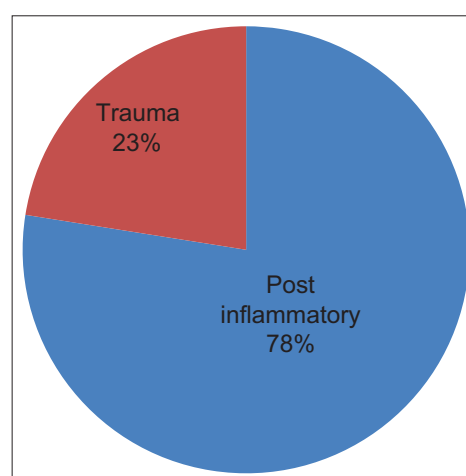


Figure 2: Etiology of urethral stricture

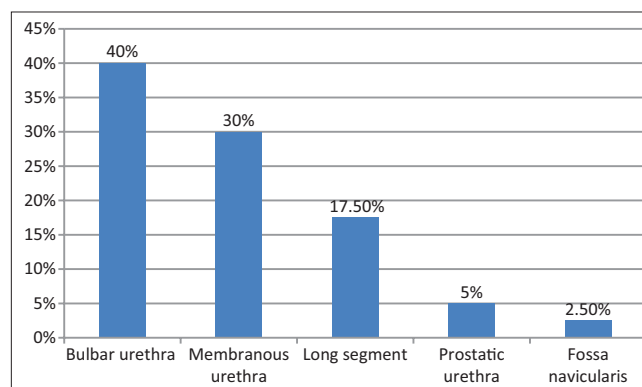


Figure 3: Site of urethral stricture

are the most common and account for about 33% of the patients while inflammatory and traumatic USs account for about 15% and 19%, respectively. Urethral stenosis is not well categorized. Idiopathic strictures occur in the bulbar urethra more frequently and can be due to childhood trauma or a congenital anomaly or due to tissue ischemia in older patients.^[9] Idiopathic stenosis of the posterior urethra

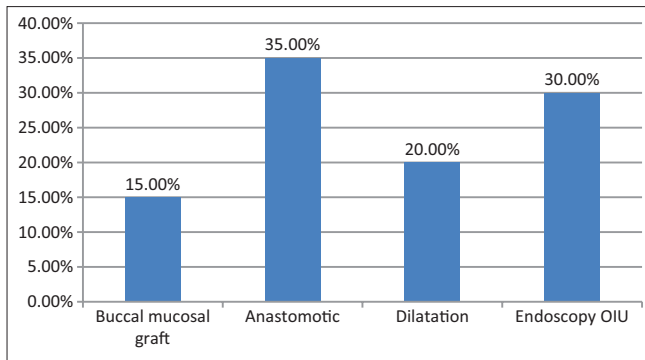


Figure 4: Treatment modalities used

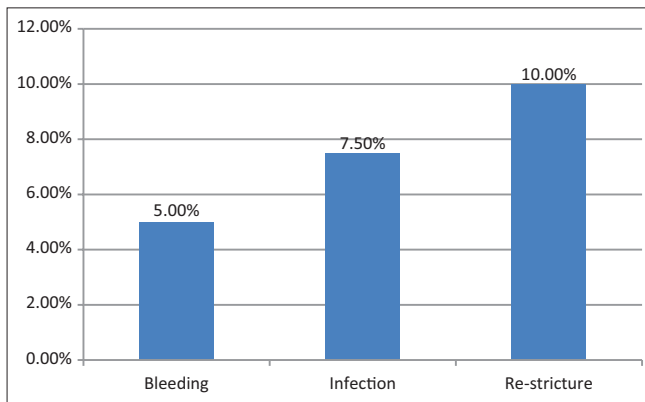


Figure 5: Complications of urethral stricture

is less common. Iatrogenic strictures occur from the region of meatus to the bladder neck and occur mostly in the penile urethra which can be a complication of hypospadias surgery in youngsters or a complication of transurethral surgery or long-term use of urethral catheters in older men.^[10] Posterior urethral stenosis can be due to trauma or intervention for the same.^[11]

Histological evaluation of a US shows changes in the extracellular matrix of the urethral spongiosal tissue where the normal connective tissue is replaced by dense fibers and a decrease in the ratio of Type III to Type I collagen fibers.^[4,5] This is accompanied by changes in nitric oxide synthesis in the urethral tissue and a decrease in the smooth muscle to collagen ratio.^[12] The anterior US following trauma or infection results in spongiofibrosis where the corpus spongiosum becomes fibrosed narrowing down the urethral lumen. Extensive fibrosis can involve the tissues outside the corpus spongiosum.

The symptoms of US include obstructions in voiding, straining while urinating, feeling of incomplete bladder emptying, and a weak stream. Recurrent urinary tract infection, prostatitis, epididymitis, bladder stones, and hematuria may also be present. Palpation of the anterior urethra to identify the depth of the scar tissue is necessary

and urinalysis should be done to rule out infections. Uroflowmetry studies might be performed to identify the voiding pattern and the presence of post-void residual volume. Retrograde urethrography (RUG) and voiding cystourethrography (VCUG) are performed to know the location, length, and severity of the US. Usually, there is narrowing of the urethral lumen at the stricture site and dilation of urethra proximal to the stricture site. If the RUG and VCUG are not informative, a cystoscopy can be performed through the meatus or by suprapubic cystostomy to know the location and elasticity of the strictured urethra. USG determines the degree of spongiofibrosis.^[13,14] Intraoperative USG with hydrodistension when the patient is under anesthesia enables accurate evaluation of anterior strictures and dispenses the need for an additional pre-operative evaluation. To ensure the stability of the stricture and to allow maximum stricturing at the time repair, it is advised to avoid the use of urethral catheters at least 6 weeks before the procedure. At times, suprapubic cystostomy can be done before 6–12 weeks before the repair to divert infected urine in case of urethral abscess or fistulas.

Urethral dilation, internal urethrotomy, and urethroplasty are done to repair US. In this study, anastomotic urethroplasty was done in 70 patients and resulted in a good prognosis. Urethral dilatation, endoscopy, and urethroplasty substitution were the other treatment modalities adopted. Complications were observed in 45 patients with the chief complication being stricture recurrence (10%) followed by infection and bleeding. Studies say that repeated urethrotomy procedures are not clinically effective and long-term high success rates are reported with urethroplasty (85–90%). The limitations of this study are its retrospective nature and the small study population. Future studies must focus on a more elaborate nature of the presentation of USs, their treatment, and associated complications.

CONCLUSION

The US is a common disease that accounts for a considerable amount of morbidity and cost to the health-care system. Proper diagnosis and repair of the strictures are essential along with the appropriate imaging modality to prevent the risk of renal failure and to reduce morbidity. In this study, the various etiologies, types of occurrence, treatment, and complications associated with US have been discussed. Urethroplasty is observed to be a definitive treatment option for US and 20 cases of failed US repair have been reported. The success rate for a repeat urethroplasty or urethrotomy was not included in this study. Further work in this regard is needed for a more comprehensive understanding of the reasons for failure

and appropriate treatment options for US. Numerous controversies still exist in this area and future studies must address these issues.

REFERENCES

1. Urethral Stricture: What Causes it? the Original; 2007. Archived from: <http://www.MayoClinic.com>. [Last accessed on 2019 Sep 13].
2. Mundy AR, Andrich DE. Urethral strictures. *BJU Int* 2011;107:6-26.
3. Palminteri E, Berdondini E, Verze P, De Nunzio C, Vitarelli A, Carmignani L. Contemporary urethral stricture characteristics in the developed world. *Urology* 2013;81:191-6.
4. Cavalcanti AG, Costa WS, Baskin LS, McAninch JA, Sampaio FJ. A morphometric analysis of bulbar urethral strictures. *BJU Int* 2007;100:397-402.
5. Baskin LS, Constantinescu SC, Howard PS, McAninch JW, Ewalt DH, Duckett JW, *et al.* Biochemical characterization and quantitation of the collagenous components of urethral stricture tissue. *J Urol* 1993;150:642-7.
6. Smith TG 3rd. Current management of urethral stricture disease. *Indian J Urol* 2016;32:27-33.
7. Anger JT, Santucci R, Grossberg AL, Saigal CS. The morbidity of urethral stricture disease among male medicare beneficiaries. *BMC Urol* 2010;10:3.
8. Fenton AS, Morey AF, Aviles R, Garcia CR. Anterior urethral strictures: Etiology and characteristics. *Urology* 2005;65:1055-8.
9. Latini JM, McAninch JW, Brandes SB, Chung JY, Rosenstein D. SIU/ICUD consultation on urethral strictures: Epidemiology, etiology, anatomy, and nomenclature of urethral stenoses, strictures, and pelvic fracture urethral disruption injuries. *Urology* 2014;83 Suppl 3:S1-7.
10. Lumen N, Hoebeke P, Willemsen P, De Troyer B, Pieters R, Oosterlinck W. Etiology of urethral stricture disease in the 21st century. *J Urol* 2009;182:983-7.
11. Palminteri E, Maruccia S, Berdondini E, Di Pierro GB, Sedigh O, Rocco F. Male urethral strictures: A national survey among urologists in Italy. *Urology* 2014;83:477-84.
12. Cavalcanti AG, Yucel S, Deng DY, McAninch JW, Baskin LS. The distribution of neuronal and inducible nitric oxide synthase in urethral stricture formation. *J Urol* 2004;171:1943-7.
13. Buckley JC, Wu AK, McAninch JW. Impact of urethral ultrasonography on decision-making in anterior urethroplasty. *BJU Int* 2012;109:438-42.
14. McAninch JW, Laing FC, Jeffrey RB Jr. Sonourethrography in the evaluation of urethral strictures: A preliminary report. *J Urol* 1988;139:294-7.

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