

MALE URETHRAL STRICTURE: AETIOLOGY AND LOCATION

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ABSTRACT

Background

Urethral stricture is a debilitating urological problem and its management remains a challenge to both the urologist and the patient. The aetiology and the location of urethral stricture largely influence the treatment on the treatment plan and the reconstructive technique for individual patient. The aim of this study is to determine the aetiology of urethral stricture and the location of the stricture in the urethra in men seen at the urology division of our hospital.

Patients and methods

This is a retrospective study of patients with diagnosis of urethral stricture. The study covered a period of 5 years, from April 2010 to March 2015. The case notes of the patients within the study period were retrieved and information on demographic data, cause of stricture and location of the stricture sought. The data was subjected to statistical analysis.

Results

A total of 103 patients with urethral stricture presented during the five-year study period. The mean age of patients was 43 ± 18 (range, 5-78 years).

Urethral infection caused most (48.5%) of the urethral strictures. Straddle injury (6.8%), pelvic fracture urethral injury (12.6%), gunshot injury (3.9%), impalement injury (1%) were the cause of traumatic stricture. Idiopathic and iatrogenic strictures were found in 9.7% and 17.5% of patients respectively.

Anterior strictures were the most common. Bulbar urethra was the most common location (56.3%) for the anterior urethral strictures. Fourteen (13.6%) patients had penile stricture while 7(6.8%) and 9(8.7%) patients had multifocal and pan-anterior (extensive) urethral strictures respectively. Posterior strictures were located in the bulbomembranous junction (7.8%) and bladder neck (2%).

Conclusion

Infection remains the commonest cause of urethral stricture in our environment as it is in many communities in sub-Saharan African countries. Post-infection urethral and other cause of external urethral injury commonly affects the bulbar urethra, making the bulbar urethra the commonest location for the stricture disease

Key Words: Male Urethral Stricture, Aetiology, Location

Introduction

Urethral stricture is a debilitating urological problem and its management remains a challenge to both the urologist and the patient¹. Infection remains an important cause of anterior urethral stricture in resource-poor countries. This is commonly due to *Neisseria gonorrhoea* infection and less frequently, chlamydia, lymphogranuloma venereum, tuberculosis and schistosomiasis.

Trauma is the most common cause in western countries². Trauma is however becoming increasingly important even in developing countries due to increase in civil violence and injury from road traffic accident (RTA). Nwofor³ and colleagues in a 5-year retrospective review of urethral stricture management in South East Nigeria concluded that trauma was currently the leading cause of urethral stricture. Similarly, Aghaji and Odoemene⁴ reported

that of 144 urethroplasties done at Enugu between 1989 and 1998 for urethral stricture, 43.8% were post-traumatic in origin, 36.1% post-inflammatory and 20.1% iatrogenic (post-catheterization).

The location of urethral stricture determines the treatment plan and urethral reconstruction choice for individual patient. Also, knowing the aetiology of urethral stricture allow development of preventive strategies to reduce the incidence and associated healthcare expenditure on the treatment of urethral stricture disease.

Many studies have been carried out on the pattern of urethral stricture in the subregion but none has specifically looked at the aetiology and distribution of urethral stricture in males. The aim of this study is to determine the aetiology of urethral stricture and the location of the stricture in the urethra in men seen at the urology division in our hospital.

Patients and Methods

This is a retrospective study of patients with diagnosis of urethral stricture. All patients had full evaluation for urethral stricture. The study covered a period of 5 years from April 2010 to March 2015. The case notes of patients with urethral stricture of the Urology division of the Jos University Teaching Hospital (JUTH) within the study period were retrieved and information on demographic data, cause of stricture, location of stricture, length of stricture sought. The data was subjected to statistical analysis with SPSS version 21.

By consensus, the term stricture is applied only to the constriction that affects the anterior urethra while elsewhere the terms distraction, contracture or stenosis is preferred⁵. We, however for ease of discussion classified urethral stricture into anterior strictures (penile, bulbar, pananterior, multifocal) and posterior strictures (-bulbomembranous, bladder neck)

Results

A total of 103 patients with urethral stricture presented during the five-year study period. The mean age of patients was 43 ±18 (range, 5-78 years).

Urethral infection caused most (48.5%) of the urethral strictures. Straddle injury (6.8%), pelvic fracture urethral injury (12.6%), gunshot injury (3.9%), impalement injury (1%) were the cause of

traumatic stricture. Idiopathic and iatrogenic strictures were found in 9.7% and 17.5% of patients respectively (Table 1).

Anterior strictures were the most common. Bulbar urethra was the most common location (56.3%) for the anterior urethral strictures. Fourteen (13.6%) patients had penile stricture while 7(6.8%) and 9(8.7%) patients had multifocal and pan-anterior (extensive) urethral strictures respectively. Posterior strictures were located in the bulbomembranous junction (7.8%) and bladder neck (2%). (Table 2)

Table 1: Aetiology of urethral stricture

Aetiology	Number	Percentage
Infection	50	48.5
Trauma	43	41.7
External trauma	25	24.3
Straddle injury	7	6.8
Pelvic fracture	13	12.6
Gun shot	4	3.9
Impalement injury	1	1
Internal (Iatrogenic)	18	17.5
Hypospadias repair	3	
Catheter related	11	
Cystoscopy	1	
TURP	3	
Idiopathic (Unknown)	10	9.7
Total	103	100

Table 2: Location of urethral stricture

Location	Number	Percentage
Anterior	93	90.3
Bulbar	58	56.3
Penoscrotal	5	4.9
Penile	14	13.6
Multifocal	7	6.8
Pan-anterior(Extensive)	9	8.7
Posterior	10	9.7
Bulbomembranous	8	7.8
Bladder neck	2	2
Total	103	100

Discussion

Our study revealed urethral infection as the commonest cause of urethral stricture. This finding agrees with that of Ibrahim⁶ and colleagues who, in their study of one-stage urethroplasty for strictures in North-eastern Nigeria found that 58.2% of urethral strictures were due to infection. Ahmed and Kalayi⁷, in a similar study in Zaria also found that infection cause stricture in 51% of cases.

In some urban centres in developing countries and in developed countries trauma has become the leading cause of urethral stricture disease^{8, 9, 10}. Different mechanisms of trauma give rise to urethral stricture. In our study trauma was the second leading cause of urethral stricture with external trauma accounting for more of the strictures than the internal (iatrogenic) trauma. Daniel¹¹ and colleagues, in a multicentre analysis of male urethral stricture found that iatrogenic trauma was the commonest cause of urethral stricture in Italy and USA. He attributed this finding to high level of transurethral surgical interventions in those countries. In south-eastern Nigeria, Nwofor³ and colleagues as well as Aghaji and Odemena⁴ have, in their separate studies reported that currently trauma is the leading cause of urethral stricture in that region of the country.

The difference in the reported aetiology of urethral stricture disease is therefore determined by geographic region. With the advent of effective antibiotics treatment, urethral infection has been less commonly associated with urethral stricture. Our hospital is located in urban centre; however it serves many rural, agrarian and cattle rearing populations in the north-central Nigeria. There is still high prevalence of gonococcal urethritis in many communities in sub-Saharan African countries¹². Most of these communities still lack access to quality health care.

Commonly, urethral strictures are located in the anterior urethra^{13, 14}. In this study of all the strictures 56.3% were located in the bulbar urethra. Post-infective strictures are usually confined to the anterior urethra, mostly the bulbar urethra and may be single or multiple¹⁵. In a ten year retrospective study of the outcome of urethroplasty at JUTH, Jos, in thirty-two patients, Dakum¹⁶ and colleagues noted that 29(90.6%) of the strictures were located in the anterior urethra. In this study, no patient presented with inflammatory stricture due to lichen sclerosis in our study. In contrast, in Europe, Asia

and America, this is a common cause of penile urethral stricture. In the review by Daniel¹¹ and colleague, Lichen sclerosis was the cause of stricture in up to 22% of patients in India.

Majority (12.6%) of the posterior stricture followed pelvic fracture in our study. In many series, pelvic fracture accounts for 5-25% of urethral stricture^{17, 18}. Pelvic fracture commonly leads to distraction defect of the bulbomembranous junction.

Conclusion

Infection remains the commonest cause of urethral stricture in our environment as it is in many communities in sub-Saharan African countries. Post-infection urethral and other cause of external urethral injury commonly affects the bulbar urethra, making the bulbar urethra the commonest location for the stricture disease.

References

1. Alwaal A, Blaschko SD, McAninch JW, Breyer BN. Epidemiology of urethral strictures. *Transl Androl Urol* 2014; 3: 209 – 213.
2. Steve BB. Urethral Stricture Evaluation and Management. *J Urol*, 1998; 157: 506-6
3. Nwofor AME, Ugezu AI. Urethral stricture management. Experience at Nnewi, South-east Nigeria. *Afr J Urol* 2004; 10: 107-11100.
4. Aghaji AE, Odoemene CA. One-stage urethroplasty for strictures: Nigerian experience. *Int J Urol* 2001; 8: 380-385.
5. Chapple C, Barbagli G, Jordan G. Consensus statement on urethral trauma. *BJU Int* 2004; 93: 1195 – 1202.
6. Ibrahim AG, Ali N, Aliyu AA, Bakari AA. One-stage urethroplasty for strictures in Maiduguri, North-eastern Nigeria. *ISRN Urology* 2012;
7. Ahmed A, Kalayi GD. Urethral stricture at Ahmadu Bello University Teaching Hospital, Zaria. *East Afr Med J* 1998; 75: 582 – 585.
8. De Schyver, Maheus A. Epidemiology of sexually transmitted disease: global picture. *Bull World Health Organ* 1990; 68: 639 – 654.
9. Fenton AS, Morey AF, Aviles R, Gracia CR. Anterior urethral strictures: aetiology and characteristics. *Urology* 2005; 65: 1055 – 1058.
10. Pieters R, Oosterlinck W. Aetiology of urethral stricture disease in the 21st century. *J Urol* 2009; 182: 983 – 987.
11. Stein DM, Thum DJ, Barbagli G, Kulkarni S, Sansalone S, Prades A et al. A geographic

- analysis of male urethral stricture aetiology and location. *BJU Int* 2013; 81: 191–196.
12. Tijani KH, Adesanya AA, Ogo CN. The new pattern of urethral stricture disease in Lagos. *Niger Post. Grad Med J* 2009; 16: 162–165.
 13. Bewes PC. Urethral strictures. *Trop Doc* 1973; 3: 77–81.
 14. Bracka A. The role of two-stage repair in modern hypospadiology. *BJU Int* 2004; 98: 89–96.
 15. Yeboah ED, Klufio GO. Bladder, Urethra and Penis. In: Badoe EA, Archampong E Q, da Rocha-Afodu JT, editors. *Principles and practice of surgery*, 3rd edition. Accra: Ghana Publishing Corporation 2000:826-829.
 16. Dakum NK, Ramyil VM, Amu CO. Outcome of urethroplasty for urethral stricture at Jos University Teaching Hospital. *Nig J. Cl. Practice* 2008; 11: 300–304.
 17. Pokorny M, Pontes JE, Pierce JM. Urological injuries associated with pelvic trauma. *J Urol* 1979; 121: 455–457.
 18. Coffield KS, Weems WL. Experience with management of posterior urethral injury associated with pelvic fracture. *J Urol* 1977; 117: 722–724.