

Original article

## Urethral Stricture and HIV: Unusual Presentations and Treatment Challenge

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### ABSTRACT

**Objective:** The clinico-pathologic features of urethral stricture in patients with HIV/AIDS are not yet clearly described in the literature. HIV/AIDS has changed the natural course and clinical features of most infectious diseases. We describe some of the features of post-inflammatory strictures associated with HIV Infection and assess the treatment challenges and outcomes of other causes of urethral stricture.

**Patients and Methods:** Consecutive men with urethral stricture who presented to the University Hospital of Gondar, North-West Ethiopia were enrolled. The HIV status, cause of the stricture, type of treatment and outcome were recorded.

**Results:** There were 25 post-traumatic and 15 post-gonococcal urethral strictures. All post-traumatic and 5 of the post-gonococcal urethral stricture patients were HIV negative. All 10 HIV positive patients had longer and denser urethral strictures than expected. The time between gonococcal infection and urethral stricture development was 3-5 years in HIV positive patients. The treatment of post-traumatic stricture included progressive perineal anastomotic urethroplasty and a good outcome was seen in more than 95%. However, the surgical treatment of patients with HIV infection was a challenge.

**Conclusion:** If post-inflammatory urethral stricture occurs in a young man where the time between known gonococcal infection and development of stricture is short (less than 5 years), HIV co-infection is most likely. The stricture in these patients will be longer and denser and not amenable to conventional endoscopic urethrotomy.

**Key Words:** Urethral stricture, gonococcal infection, trauma, treatment, HIV

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## INTRODUCTION

Urethral stricture has been a common disorder since ancient time. The treatment of anterior urethral stricture using metallic dilators dates back to 6,000 B.C., though causes were not mentioned<sup>1</sup>. Little evidence exists as to other attempts at identifying causes or further treatment until 1936 when Dennis Browne reported successful urethroplasty. Endoscopic treatment of anterior urethral stricture began in the 1960's<sup>2</sup>.

Post-inflammatory scarring after infection or catheterisation involves the bulbospongiosus part of the urethra, and loss of more than two-thirds of the urethral lumen leads to symptoms<sup>2,3</sup>. However, posterior urethral disruption following trauma is an obliterative process, because the disrupted ends of the urethra heal by scarring<sup>4,5</sup>.

There has been a change in the etiology of urethral stricture from gonococcal to idiopathic causes in most developed countries, while trauma remains the leading cause in some developing countries<sup>6,7</sup>. Post-gonococcal urethral stricture, even though rare in the western world, still contributes to the pathogenesis of anterior urethral stricture in many low income countries<sup>7</sup>.

Since the advent of the HIV/AIDS pandemic, the clinico-pathologic features of urethral stricture have not yet been clearly described in the literature. HIV/AIDS has changed the natural course and clinical features of most infectious diseases. We therefore describe some of the peculiar features of post-inflammatory strictures in relation to HIV infection and assess the outcomes and treatment challenges of other causes of urethral stricture.

## **PATIENTS AND METHODS**

Consecutive patients (n=40) with urethral stricture who presented to the University Hospital of Gondar, North-West Ethiopia, were enrolled in the study from October 2007 to September 2008. Socio-demographic features, HIV status and CD4 counts were determined after obtaining voluntary informed consent.

Each patient had retrograde urethrography to assess the urethra. Endoscopy and other imaging studies were done as necessary. Outcome of intervention was assessed subjectively from patients' description of urinary flow. Surgical procedures were individualized according to the patient's disorder, namely: endoscopic internal urethrotomy (EIU), progressive anastomotic urethroplasty or substitution urethroplasty. All HIV positive patients were put on anti-retroviral therapy (ART) when their CD4 counts were below 400 cells/ $\mu$ l. Procedures were deferred in those cases till the CD4 count was  $>200$  cells/ $\mu$ l.

## **RESULTS**

A total of 40 patients were included in the study. The causes of urethral stricture and HIV infection status are shown in Table 1. The age of all patients with HIV and urethral stricture was below 40 years. Progressive perineal anastomotic urethroplasty was performed in all the post-traumatic cases (Table 2). Post-inflammatory urethral strictures were treated with (EIU) in 5 cases, Blandy's perineal urethrostomy (a permanent perineal urethrostomy as described by John Blandy) in 5 and substitution urethroplasty in 3. Two cases of post-inflammatory stricture complicated with urethro-rectal fistulae at the level of the prostatic urethra were not treated surgically.

In post-traumatic urethral strictures the success rate of progressive perineal anastomotic urethroplasty was 24/25 (90%). Surgical treatment of post-traumatic strictures mainly depended on the length and denseness of the stricture. Five cases of post-gonococcal stricture 2 cm or shorter were treated with EIU and outcomes at 18 months were good (no clinical recurrence, no straining, no weakness or spraying of the stream) (Table 3). These patients were all HIV negative. The other 10 cases were HIV positive and the strictures were much longer on urethrography (4 cm in 4 cases and 6 cm in 6 cases). All of them had CD4 counts less than 400 cells/ $\mu$ l but none had clinical AIDS. It was found that all were unsuitable for EIU because of the denseness and length of the stricture.

Among the 10 HIV-related urethral strictures, 5 patients underwent Blandy's perineal urethrostomy and 3 cases had buccal mucosa substitution urethroplasty. The perineal urethrostomy has been well tolerated by the patients and no meatal stenosis occurred during follow up. In patients with substitution urethroplasty the urethra remained patent for the minimum follow-up of 18 months.

**Table 1:** Causes of urethral stricture and HIV infection status

Cause of urethral stricture	HIV negative	HIV positive	Total (%)
Pelvic fracture	19	0	19 (47.5)
Straddle injury	5	0	5 (12.5)
Post-gonococcal infection	5	10	15 (37.5)
Post-open prostatectomy	1	0	1 (2.5)
<b>Total</b>	<b>30</b>	<b>10</b>	<b>40 (100)</b>

## DISCUSSION

As in most developing countries, the major cause of urethral stricture in this series was traumatic injury. The other important cause was post-inflammatory (after gonococcal urethritis) with HIV co-infection. These patients posed a challenge due to our lack of experience and the absence of literature guidelines on the optimal management.

The first unusual feature in the HIV co-infected cases was the longer and denser strictures and the probability that substitution urethroplasty would be too major an operation in these unfit patients. The second unusual finding and treatment challenge was that the strictures developed within 5 years post-infection, and the course of the disease remains obscure in terms of future progression or regression. This tends to preclude or postpone definitive reconstructive procedures. As this involves young men (less than 40 years) we believe that HIV infection may cause rapid and extensive progression of the stricture.

Given the lack of literature on the subject and the uncertain course of the disease, we decided to perform Blandy's perineal urethrostomy as a temporary measure so as to allow patients to take antiretroviral drugs to improve their immune system<sup>8</sup>.

**Table 2:** Types of surgical operation used for treatment of various forms of urethral stricture

Type of operation	Number	Percentage
Progressive anastomotic perineal urethroplasty	25	62.5
Endoscopic internal urethrotomy	5	12.5
Blandy's perineal urethrostomy	5	12.5
Substitution urethroplasty	3	7.5
No major reconstruction attempted	2	5

Barbagli's urethroplasty was performed for those who appeared fit for surgery (no opportunistic infection and CD4 count >200 cells/ $\mu$ l.)<sup>9</sup>.

Both groups of patients did well and especially those who had temporary perineal urethrostomy recovered rapidly from their concurrent illness, and had a better quality of life. The two patients who had urethro-rectal fistulae at the prostatic urethral level received no surgical treatment except the attempt to control infection in the hope that it would heal spontaneously<sup>10</sup>.

The results in post-traumatic stricture management with progressive urethroplasty approached 95% in this study. Recurrence occurred in one patient who developed stricture following open prostatectomy. These outcomes are comparable to reports elsewhere<sup>11-13</sup>.

## CONCLUSIONS

If post-inflammatory urethral stricture occurs in a young man within 5 years after gonococcal infection, HIV co-infection is likely, and the stricture appears denser and longer than the usual post-inflammatory stricture in non-HIV infected individuals. It remains uncertain whether permanent reconstructive surgery or diversion is the most appropriate management.

**Table 3:** Management of post-inflammatory strictures, length of urethral stricture, and HIV status

Type of procedure	Age range	Number	Length of stricture	HIV Negative	HIV positive	Remark
Endoscopic internal urethrotomy	>40 years	5	Less than or equal to 2 cm	5	0	Good outcome
Blandy's procedure	<40 years	5	More than 6 cm	0	5	For future conversion
Substitution urethroplasty	<40 years	3	4-6 cm	0	3	Barbagli's technique
None	38 and 32 years	2	Difficult to assess	0	2	Both have urethro-rectal fistulae at prostatic urethra
<b>Total</b>		<b>15</b>		<b>5</b>	<b>10</b>	

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