

# **Histopathological findings in post-inflammatory urethral strictures treated at Mulago hospital, Kampala, Uganda.**

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**Key words:** Histopathology, post-inflammatory, urethral strictures.

The predominant risk factor for recurrence of urethral stricture after surgical treatment is the extent of scarring and other related pathological findings in the affected segment of the urethra. In this study, 107 patients with post inflammatory urethral strictures aged between 23-79 years seen between 1996 and 1998 underwent a two-staged urethroplasty. During the first stage, incisional biopsies were taken from four areas namely the stricture itself, the segments proximal and distal to the stricture and the peri-urethral tissues surrounding the stricture. All the four biopsies for each patient were subjected to histological examination. The main histological finding was non-specific chronic inflammation and fibrosis. In the stricture part there was moderate diffuse chronic inflammation. In proximal segment, severe chronic inflammation with ulceration of stratified squamous epithelium and urinary pockets were the predominant histological findings. In the distal segment, mild chronic inflammation dominated. Lastly, in the peri-urethral tissues there was fibrosis interspersed with chronic mild inflammation.

## **Introduction**

The traditional surgical treatment of post-inflammatory urethral strictures includes bouginage, internal urethrotomy, excision of the stricture and primary end-to-end anastomosis, patch graft urethroplasty and two-staged urethroplasty<sup>1,2,3</sup>. All these modes of management of urethral strictures are invariably followed by recurrence. The recurrence rate one year after surgery for internal urethrotomy has been reported at 58-89%, for excision and end-to-end anastomosis varies between 10% and 30%, while for patch grafts it is 4-20%. The two-staged urethroplasty has the lowest recurrence rate ranging from 5% to 10%<sup>4</sup>.

The factors believed to be responsible for the recurrences include postoperative infection, poor surgical technique, previous traumatic bouginage, poor blood supply and the extent of scarring and inflammation in the affected segment of the urethra<sup>5</sup>. This study was aimed at determining the degree of fibrosis and inflammation in the post-inflammatory urethral strictures of patients seen at Mulago hospital in Kampala, Uganda.

## Patients and Methods

A total of 107 patients aged between 23-79 years, with post-inflammatory strictures were treated at Mulago Hospital in Uganda between 1996 and 1998 inclusive. As part of the pre-operative evaluation, all these patients had cystourethrography to determine the exact location and extent of their strictures. Complete enbloc excision of the stricture was done in 59 patients who had complete spongiofibrosis with solid strictures. For the rest of the patients the strictures were completely mobilized and marsupialized including 2cm of macroscopically normal looking proximal and distal urethral segments. In addition, incisional biopsies were taken from four areas associated with the stricture:

- i) The stricture area,
- ii) The segment proximal to the stricture,
- iii) The segment distal to the stricture and
- iv) The periurethral tissues surrounding the stricture.

All the four tissue specimens for each patient were subjected to histological examinations.

## Results:

The main histopathological findings were non-specific chronic inflammation and fibrosis. However, there were variations in the four as follows:

- i) In stricture segment, the histology predominantly showed squamous metaplasia of the epithelium associated with moderate diffuse chronic inflammation. (Fig.I).

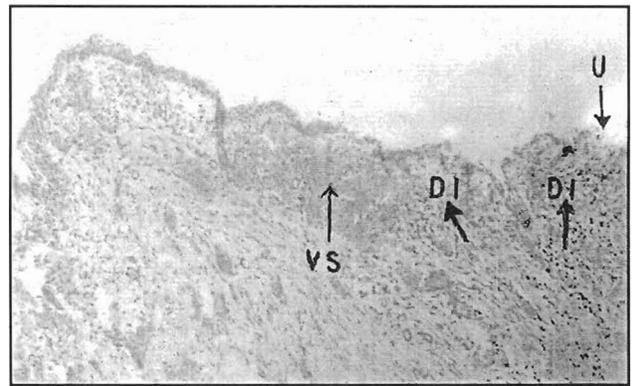


Figure I. Photomicrograph of tissue in Post-inflammatory urethral stricture showing diffuse chronic inflammation (DI), Ulceration (U) and vascular stasis (VS). Haematoxylin & Eosin X 10.

- ii) The segment proximal to stricture histology showed intense chronic inflammation (Fig.II).

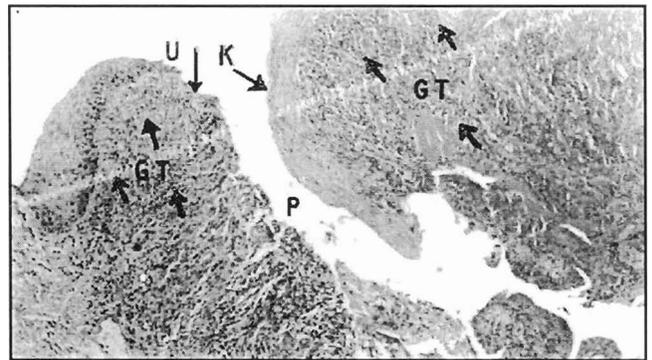


Figure II: Urethra proximal to the stricture showing ulceration (U), cornification (K), granulation tissue with intense infiltration by chronic inflammation (GT) and pockets (P).

- iii) In the distal segment there was mild chronic inflammation (Fig.III)

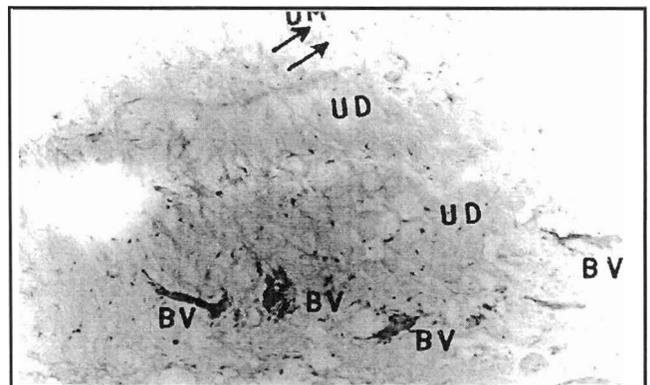


Figure III: Urethra distal to the stricture showing degeneration of muscle (DM), Vascular atrophy (VD) and a few blood vessels (BV).

- iv) In peri-urethral tissues histology showed fibrosis interspersed with chronic mild inflammation (Fig.IV).

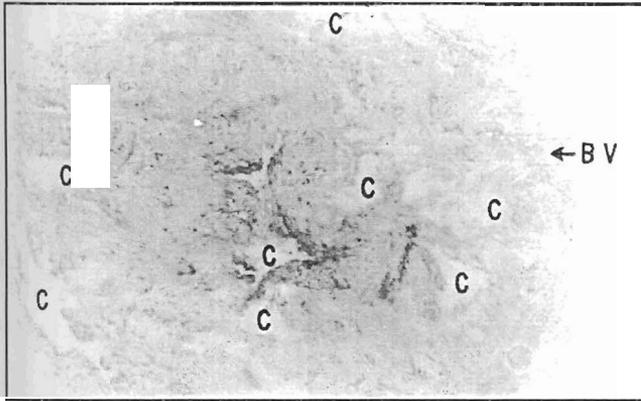


Figure IV: Para-urethral tissue showing caverns, pockets (C) and a few blood vessels (BV).

## Discussion

The histopathological findings in the post-inflammatory strictures treated at Mulago Hospital related closely to the local complications of strictures. The spongiofibrosis narrows and subsequently obliterates the urethral lumen causing urinary flow obstruction. The urinary pockets provide access to extravasation of urine,

periurethral abscesses, and urinary fistulae. The presence of chronic inflammation in the proximal and distal segments to the stricture may explain some of the recurrences seen after patch graft, excision and end-to-end anastomosis type of urethroplasty. Extensive excision of these tissues would lead to shortening of the urethra and penile curvatures during erection.

The two-staged urethroplasty appears to be followed by a low recurrence rate because it provides for excision of scar tissue and the marsupialization of the urethra followed by the interval of 3 - 6 months, permits complete resolution of inflammation in the entire affected urethral segment.

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