Urethroplasty as urethral stricture treatment at the Hospital Universitario Dr. José Eleuterio González; Monterrey, Nuevo León, Mexico

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ABSTRACT

Introduction: Not until the second half of the twentieth century did urethroplasty come into use, based on the work of the English urologist Richard Turner Warwick, taking the place of urethral dilatation, first described in India in 600 B.C.

Materials and methods: Urethroplasty treatment results in 28 patients with complicated urethral stricture are presented. Patients underwent urethroplasty at the Urology Service of the Hospital Universitario in Monterrey, Mexico, within the time frame of March 2005-2008. The following techniques were used: stricture zone excision and end-to-end anastomosis in those patients with posterior urethral stricture of 1 cm or less in length; two-stage Johanson technique or the application of buccal mucosa graft in one or two stages was used in patients with stricture larger than 1 cm or with anterior urethral stricture.

Results: The most common complications were recurrent urethral stricture and urethrocutaneous fistula. Intraurethral splints (Urolumen™) were applied in 3 patients due to recurrent stricture. Total success rate was 67%.

RESUMEN

No fue hasta la segunda mitad del siglo XX en que se inició el uso de las uretroplastías en base al trabajo del urólogo inglés Sir Walter Turner Worwick, desplazando el uso de la dilatación uretral descrita por primera vez en la India 600 años AC.

Material y métodos: Se presenta el resultado del tratamiento mediante uretroplastía de 28 pacientes con estenosis de la uretra complicada, tratados en el Servicio de Urología del Hospital Universitario de Monterrey, N. L. entre enero de 2005 a marzo de 2008 mediante uretroplastía. Se describe el uso de las técnicas utilizadas: escisión de la zona estenosada y anastomosis término-terminal en aquellos casos con estenosis de uretra posterior de 1 cm o menos de longitud. En los que presentaban estenosis de más de un centímetro o estenosis de uretra anterior, se usó la técnica en dos tiempos de Johansson o la aplicación de injerto de mucosa bucal, en uno o dos tiempos.

Resultados: Las complicaciones más comunes fueron re-estenosis uretral y fístulas uretrocutáneas. Se aplicaron férulas intrauretrales (Urolumen™) en tres pacientes por re-estenosis. La tasa de éxito total fue de 67%.
INTRODUCTION

In the Hindu Ayurveda in 600 B.C., Sushruta1 was the first to describe metal or wooden urethral dilators as treatment for urethral stricture. In the year 200 B.C., Erasistratus of Greece described the use of an S-shaped metal catheter for urethral stricture dilatation. From that date and for centuries later there were no important advances. At the end of the seventeenth century the French surgical operation called “La Butonnière” began to be used, which consisted of making a buttonhole in the dilated urethra behind the strictured area.

During the eighteenth century “La Butonnière” continued to be used to treat impassable stricture. Some attempts at internal urethrotomy and dilatation were made using metal dilators. Even caustic intraurethral substances were used for the purpose of softening or destroying the strictured area that could not be opened, producing more urethral damage.

The introduction of chloroform anesthesia in 1857 by Sir James Young Simpson and the work of Lord Joseph Lister on asepsis and antisepsis 10 years later paved the way for performing greater and riskier surgery and the fear of postoperative sepsis began to disappear. And so at the end of the nineteenth century extirpation of the strictured area with anastomosis of the urethral ends began to be performed, but due to frequent failure the technique was not popular and stopped being used. Therefore urethral stricture treatment continued to be based on internal urethrotomy and dilatation and chronic urethral calibration2 to which suprapubic cystostomy to divert urine was added.

It was not until the second half of the twentieth century with the work of the famous English “urethrologist” Richard Turner Warwick that urethroplasty, based on excision of the strictured area, and primary urethral anastomosis came into use again.3,4 Since then new techniques such as skin, bladder urothelium and buccal mucosa free and pedicled grafts and expandable metal urethral splints have been developed.

MATERIALS AND METHODS

Within the time frame of January 2005 and March 2008, 28 patients presenting with complicated urethral stricture underwent urethroplasty at the Urology Service of the Hospital Universitario de Monterrey. Mean patient age was 38 years (16-56 year range). All patients had a history of multiple treatments especially those consisting of repetitive urethral dilatations and internal urethrotomy. Patients presenting with urinary retention...
underwent cystostomy. Stricture etiology is shown in Table 1 and anatomical location in Table 2.

All patients had undergone previous treatments: direct vision internal urethrotomy (33%), frequent ureteral dilatation (51%) and failed urethroplasty (15%). Mean stricture length was 2.3 cm (1-8 cm range).

Retrograde urethrogram was ordered for all patients and shock urethrogram for those patients with cystostomy.

Once patients were evaluated, surgical treatment was carried out by means of different urethroplasty techniques (Table 3) that were determined by stricture length, complexity, location and spongiofibrosis of the affected urethra.5,6

In membranous or bulbar urethral stricture cases of 1 cm or less in length, the affected urethral segment was extirpated, followed by end-to-end anastomosis (Images 1 and 2). Urethrotomy anterior or posterior to the affected zone was carried out with 2-stage Johanson urethroplasty on larger affected segments of posterior or bulbar urethra7 (Image 3) or with 1-stage procedure using buccal mucosa grafts (Images 4, 5 and 6).7,8

Excision with end-to-end anastomosis was never attempted in anterior urethral stricture since shortening the penile urethra makes cicatrization difficult, produces penile curvature and hinders normal erection. Two-stage Johanson urethroplasty was carried out in those patients (Images 7 and 8).

The “Urolumen™” intraurethral splint was used in 3 patients (10.6%); as primary bulbar urethral stricture treatment in 1 patient and as posturethroplasty stricture treatment in the other 2 patients.9,10

- RESULTS

There were early complications in 12 patients (42.6%) and late complications in 16 patients (57%) that are described in (Table 4). Two of the patients with posterior urethral stenosis were treated with Urolumen™ and one of them developed urinary incontinence. After complications were treated, 2 patients (7.1%) still had urethrocutaneous fistula and refused to be treated for this complication because they were able to urinate.
with no problem. Six patients (21.4%) presented with recurrent stenosis and have not been treated yet and so their cases were considered to be failures. Total success rate of the present series was 67% (19 of the 28 patients).

**DISCUSSION**

For many centuries there was not much difference among urethral stricture treatment of any etiology. Treatment consisted mainly of urethral calibrations and dilatations and in addition to being very bothersome and painful these procedures did not cure the patient and were the source of serious complications such as infections, sepsis, bleeding, urethral perforation and urinoma. “La Butonnière” and blind or direct vision internal urethrotomy were improved treatments but the former was completely palliative and deforming and the latter had many failings and frequent important complications such as bleeding, urinary extravasation and recurrence.

In the past century, largely due to the work of the English urologist Richard Turner Warwick in the 1960s, it was demonstrated that urethral stricture could be surgically treated with good results. The advent of buccal mucosa free grafts generated greater interest
in the treatment of urethral stricture patients and thus a large percentage of these patients stopped being tortured with urethral dilatations that in the end did not cure them.

In the present series, 28 patients presenting with complicated urethral stricture were treated. These patients had undergone previous procedures and many of them presented with large areas of urethral destruction. Good results were obtained in 67% of patients which is a little below the average of other centers. Despite impressive advances in surgical treatment of urethral stricture since the second half of the past century there is not yet a definite cure for all of these patients. Perhaps in the present century with the progress made in the use of artificial tissue replacement and bioengineering with bovine collagen compounds combined with tissue and embryonic cell cultures the urethra will be able to be reconstructed with better and more lasting results.11.

**BIBLIOGRAPHY**