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## URETHROPLASTY IN POSTERIOR URETHRAL INJURIES

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### Abstract

To assess the efficacy of urethroplasty (excision with end to end anastomosis) in posterior urethral injuries. Fifteen patients with complete urethral disruption were treated by this method and followed with objectives and subjective parameters for 2 years. The results are graded into 3 grades (excellent, satisfactory and poor) according to continence and flow rate of urine, 80% of cases have stricture (>2 cm) in length. Those patients who are treated with perineal approach result in (92%) excellent, in comparison to those with transpubic urethroplasty who give only (50%) excellent results. Patients with no history of urethral handling give (100%) excellent results, while only (25%) excellent results in patients with previous urethral surgical intervention. Urethroplasty is the best method for repairing completely obliterated strictures. Intraoperative endoscopic checking of posterior urethra is important to avoid fistulous tracts. Dilatation and urethrotomy may be used as complementary procedures to urethroplasty. Pubectomy sometimes necessary in complicated cases.

### Introduction

Trauma is a major cause of urethral disruption and stricture in the posterior urethra. Disruption of the prostatic-membranous urethra occurs in approximately (10%) of the patients with pelvic fractures, such injuries usually end up with stricture formation. Submucosal scars, has little effect on the diameter of the lumen, while dense scarring in the corpus spongiosum produces marked contracture of the lumen. The effect of superadded infection further worsens the condition. Complete defects of the urethral wall for more than 1 cm in length, heals by fibrosis with obliteration of the lumen<sup>1,2</sup>.

It has been established that the urethra is capable of regenerating all its components including the corpus spongiosum<sup>3</sup> if a narrow strip was left intact.

Urethroplasty is one of the methods of treatment of urethral strictures. It is best suited for cases with complete disruption or after multiple failed urethrotomies and in complicated strictures (e.g. coexistent fistula, Etc.)<sup>4</sup>.

Urethroplasty could be done by

(regeneration, substitution, and excision with spatulated, tension free, end to end anastomosis), the last is the only procedure with long term success rate approximating 100%<sup>5,6</sup>.

### Materials and Methods

From January (1977) till December (1999), 15 patients with completely obliterated posterior urethra strictures presented to our urology department.

Patients age ranging from 8 years-60 years with 10 patients being 15-40 years.

All cases are caused by trauma, 12/15 associated with fracture pelvis, 13 patients presented with suprapubic cystostomy tube, 1 patient had prostatic-perineal fistula and 1 patient had posterior urethral diverticulum, 4 patients had previous urethral manipulation (rail-roading, scrotal in lay Urethroplasty).

The interval between the causative event and the operation varied between (3 months-12 years).

The length of the stricture ranged between (1-5 cm) with (80%)>2cm.

In all cases up and down urethrography,

urethroscopy, U./S. and I.V.U., urine C./S. are done preoperatively.

Post operatively all cases had uro-flowmetry, retrograde urethrography, urethral calibration with foley's catheter, U./S., urine C./S., at monthly interval along the period of the study.

The procedure was carried out through on inverted (Y) perineal incision in 11 cases, pubectomy was necessary in 4 cases. The bulbar urethra was dissected down to the proximal end of the strictured segment which led to the apex of the prostate, and the strictured segment excised, all the periprostic fibrosis was removed, this dissection necessitated excision most of the intramontanal prostate in most cases. Intraoperative endoscopic examination of the posterior urethra to verify the verumontanum and both prostatic lobes was carried out to avoid epithelialised tracts. The mucosa of the post urethra was everted by stitches, then the distal end spatulated and anterior urethra mobilized and a tension-free bulbo-prostatic anastomosis was done with 4-6 sutures of (2/0) dextone over Foley's catheter. The operation was completed by insertion of suprapubic catheter and perineal wound drain.

In 4 patients tension-free anastomosis could not be done through the perineum and a combined abdomino-perineal exposure with pubectomy was performed, with insertion of suprapubic tube drain and perineal corrugated drain. The urethral catheter was removed 3 weeks after the procedure.

## Results

The results were graded into 3 groups as followings:-Excellent:- Patients are to void as before and is continent at rest and during stress conditions with urine flow rate ( $>15$  ml/sec.). Satisfactory :- Urinary stream fairly good although not the same as before and or continent at rest but not during stress and or flow rate (10-15 ml/sec.). Poor:- Voiding is so deficient or there is complete incontinence and flow rate ( $<8$  ml/sec.). The infection disappeared in 14 patients after surgical correction (92%), while in 7 patients retained infection even after

correction, 3 patients have reflux preoperatively, after correction of the strictures only "one" patient continued to have reflux.

The results of the procedures were checked according to the type of the procedures, 2 patients of those who are treated with transpubic and one patient with abdomino-perineal approach without pubectomy, needed post operative complementary procedures in form of dilatation and optical urethrotomy after 2 months from the surgery and they did well after that. Those patients exposed to road-traffic accidents resulting in multiple pelvic fractures and complete urethral disruptions later on presented with high up prostate and extensive callus and one of them with perineal urinary fistula.

Length of the stricture found to have no significance on outcome.

As 11 patients had no past history of urethral handling, while the remaining 4 patients gave history of urethral manipulations, we compare the final results of these 2 groups.

Residual urine was positive in one patient only of the 15 patients, after surgical correction, and it is improved in the others.

## Discussion

Posterior urethral stricture with completely obliterated lumen treated by methods other than urethroplasty has a high recurrence and or failure rates.

Those patients without history of urethral handling did better than those with previous history of urethral handling. This is in accordance with other series since more fibrosis is induced with each intervention<sup>7-11</sup>.

The length of the stricture did not affect the outcome of our repair, which makes this method superior to other methods in long strictures, similar results were reported<sup>11,12</sup>.

Post operatively, the procedure succeeded in eradicating the infection in almost all cases (see table).

Although all our cases had preoperative (U.T.I.), it did not affect the outcome greatly. This may be attributed to the success in controlling most of the

infection states after opening the stricture. Similar results were achieved in other studies<sup>13</sup>.

The procedure led to disappearance of residual urine in (92%) of the patients which help further in eradicating infection.

Vesico-uretric reflux was seen in 3 patients, 2 of them below 15 years. This was reported also in other studies, in some of them as high as (90%)<sup>14,15</sup>. Reflux resolved in 2 cases after repaired and removal of catheters.

Uroflowmetry is found to be an easy and accurate way of follow up and better than depending on symptoms alone, since symptomatology of strictures correlate poorly with the need for inversion, while flow is proportional to the square of the urethral diameters. That's why the flow rate changes earlier than the appearance of symptoms<sup>16</sup>.

In this study, urethroplasty done without pubectomy give excellent results in (92%) in comparison to transpubic urethroplasty, which give only (50%) excellent results, this may be due to extensive tissue dissection which may result in sphincteric damage or it may affect the neuro-vascular bundle at the posterior urethra and bladder neck which is the only continence mechanism preserved.

Frequent intraoperative endoscopic examination to verify the verumontanum, and prostatic lobes was extremely helpful in enabling us to excise epithelialized tracts mimicking the posterior urethra thus achieving a

proper end to end anastomosis.

Two patients of those who are treated with transpubic urethroplasty developed narrowing of the urinary stream (stricture). Few months after the procedure and treated by dilation and optical urethrotomy, these procedures considered as complementary to urethroplasty<sup>17</sup>.

This study shows that, urethroplasty is better and easier to be achieved through perineal approach only but if tension-free anastomosis couldn't be achieved, then pubectomy will provide excellent exposure and making better anastomosis possible. However, the use of pubectomy has not been favored because of the supposed (excessive blood loss, long operative time and long term post operative pain). In conclusion Urethroplasty is the best and perhaps the only method for repairing traumatic disruption of posterior urethra, resulting in completely obliterated stricture.

Excision and end to end anastomosis with mucosal eversion, ensures patient anastomotic repair. Frequent intraoperative endoscopic examination of prostatic urethra is necessary to avoid epithelialized fistulous tracts mimicking the posterior urethra which need to be excised.

Dilatation and urethrotomy may sometimes necessary to complement urethroplasty in few cases.

Pubectomy may be needed in some cases where tension-free anastomosis is difficult to achieve.

| <b>Infection</b>                  | <b>Pre-operative</b> | <b>Post-operative</b> |
|-----------------------------------|----------------------|-----------------------|
| No. of patients with infection    | 15(100%)             | 1 (8%)                |
| No. of patients without infection | -                    | 14 (92%)              |
| Total No.                         | 15                   | 15                    |

| Procedure                                      | Excellent | Satisfactory | Poor | Total |
|------------------------------------------------|-----------|--------------|------|-------|
| No pubectomy (peri-anal and abdomino perineal) | 10(92%)   | 1 (8%)       |      | 11    |
| Pubectomy (Transpubic)                         | 2 (50%)   | 2 (50%)      | -    | 4     |

| Patients                           | Excellent | Satisfactory | Poor | Total |
|------------------------------------|-----------|--------------|------|-------|
| (-ve) history of urethral handling | 11 (100%) | -            | -    | 11    |
| (+ve) history of urethral handling | 1 (25%)   | 3 (75%)      | -    | 4     |

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