



## Arab Journal of Urology (Official Journal of the Arab Association of Urology)

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### THE OUTCOMES AFTER POSTERIOR URETHROPLASTY REVIEW

# Unsuccessful outcomes after posterior urethroplasty



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Received 17 December 2014, Received in revised form 6 January 2015, Accepted 18 January 2015

Available online 23 February 2015

#### KEYWORDS

Urethral injury;  
Posterior urethroplasty;  
Pelvic fracture;  
Post-traumatic stricture

#### ABBREVIATIONS

PU, posterior urethroplasty;  
DVIU, direct-vision internal urethrotomy

**Abstract** Posterior urethroplasty is the most common strategy for the treatment of post-traumatic urethral injuries. Especially in younger patients, post-traumatic injuries are a common reason for urethral strictures caused by road traffic accidents, with pelvic fracture or direct trauma to the perineum. In many cases early endoscopic realignment is the first attempt to restore the junction between proximal and distal urethra, but in some cases primary realignment is not possible or not enough to treat the urethral injury. In these cases suprapubic cystostomy alone and delayed repair by stricture excision and posterior urethroplasty is an alternative procedure to minimise the risk of stricture recurrence.

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#### Introduction

After complete disruption of the posterior urethra the common procedure is to insert a suprapubic catheter after the initial trauma and to perform a urethroplasty later. After primary wound healing a radiological

assessment will show the stricture length and location. Retrograde urethrography combined with cystography can determine the accurate stricture length and shape of the bladder neck. Selecting the appropriate operative technique depends on these findings.

In post-traumatic injuries there are delicate pre-conditions. Stricture excision and primary anastomosis is a very effective treatment for short urethral strictures. There are two treatment options, the perineal or the perineo-abdominal technique with stricture excision and primary anastomosis of the posterior urethra.

Koraitim [1] investigated 20 patients with unsuccessful outcomes from an original series of more than 250 patients who were treated by perineal or perineo-abdominal repair. Shortly after catheter removal,

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Peer review under responsibility of Arab Association of Urology.



55% of the patients had complications like failure to void or incontinence. Long-term complications followed in 45% of patients for up to 12 years, who developed a weak urinary stream and were treated by salvage urethroplasty or bladder neck repair. In complex urethral distraction defects after pelvic fracture, Koraitim [2] described several complications, such as para-urethral fistula (bladder, rectal and cutaneous), urinoma and bladder neck incompetence. He described significant factors that influenced the outcome of patients undergoing a perineal repair of urethral injury. These were a complex excision of scarred tissues and prostatic displacement. Previous treatment did not worsen the outcome [3].

Hussain et al. [4] reported on 40 cases with 26 indirect (pelvic fracture) and 14 direct (to perineum or urethra) trauma. Twelve patients developed complications after surgery. All patients had the stricture excised and a primary end-to-end anastomosis after post-traumatic complete obliteration of the urethra. There were complications in 11 (28%) of the patients, which consisted of stricture recurrence in seven (18%), erectile dysfunction in two (5%) and urethrocutaneous fistula in one (3%). Early complications of wound infection appeared in one patient (3%).

### Treatment options after failed PU

In cases of a re-stricture after PU, direct-vision internal urethrotomy (DVIU) could be a possible attempt to repair short strictures ( $\leq 1$  cm). Helmy and Hafez [5] showed that DVIU for re-strictures after PU was successful in 90% of patients. In their study, 22 patients with urethral injury after a road traffic accident and pelvic fracture underwent a perineal approach for anastomotic urethroplasty. They postulated that DVIU could be sufficient in patients with strictures  $< 1$  cm long if a guidewire can be passed through the stricture. Morey and McAninch [6] described DVIU as a promising option in re-strictures after primary urethroplasty, underlining the high likelihood of success. An overall success rate of 92% in 142 cases of PU was reported. Three failures were treated successfully by DVIU, five by repeat urethroplasty [7].

Longer re-strictures or complete obliteration of the urethra should be treated by a repeat urethroplasty. Levine et al. [8] investigated 476 patients and compared the revision urethroplasties to a cohort with no previous urethroplasty. Urethral patency rates did not differ significantly between the groups. The revision group had a higher incidence of chordee and UTIs. The predictors for stricture recurrence after urethroplasty in children were identified by Vashishtha et al. [9], and aetiology, stricture length and fibrosis at the local site had an effect on the rate of recurrence. In a study of 82 patients, Morey and McAninch [10] reported a long-

term success rate of 97% after a follow-up of 1 year. They emphasised that a tension-free bulboprostatic anastomosis and a wide calibre were the most important preconditions for surgical success. Furthermore, Morey and Kizer [11] investigated the limits in extended strictures for reconstruction by excision PU, reporting that stricture lengths of up to 5 cm are reconstructable, depending on the elasticity of the distal urethral segment.

An alternative to stricture excision and repeat end-to-end urethroplasty is the use of free buccal mucosa transplants for reconstructing the urethra [12]. Distances of  $\geq 10$  cm can be augmented without mobilising the proximal and distal urethra, with a lower risk of shortening the penile urethra and of curvature. In the posterior urethra placing a ventral graft preserves the nerves and dorsal blood supply.

If there is complete destruction of the urethral plate or very long gaps, a two-staged urethroplasty is necessary. For two-staged urethroplasties buccal mucosa or epidermal skin can be used as a free transplant. In the first step the transplant is fixed at the dorsal side of the urethra to substitute the urethral plate. In the second step the neo-urethra is mobilised and closed to reconstruct the complete tube.

The mesh-graft technique uses epidermal grafts of the skin from the inner side of the thigh. Pfalzgraf et al. [13] showed that the stricture recurred in 16% in the two-staged mesh-graft technique. However, it was associated with erectile dysfunction and curvature in 4% and 9% of patients.

The outcome of different operative options after failed primary PU must be assessed to find the best way of treating this complication. Stricture recurrence is not the only endpoint for measuring success after PU. Continence, erectile function, and quality of life are also important aspects.

### Conflict of interest

None.

### Source of funding

None.

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