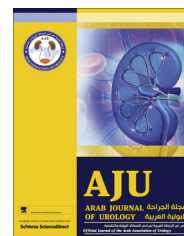




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DELAYED REPAIR OF PFUI REVIEW

Optimising the outcome after anastomotic posterior urethroplasty



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KEYWORDS

Pelvic fracture;
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Outcome;
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ABBREVIATION

PFUI, pelvic fracture
urethral injury

Abstract Objectives: To develop a plan that would optimise the outcome after an anastomotic repair of a pelvic fracture urethral injury (PFUI).

Methods: Data on the delayed repair of PFUI from reports in English were critically reviewed. The search criteria included reports by high-volume surgeons and those from tertiary centres of reconstructive urethral surgery.

Results: The delayed repair of a PFUI should not be attempted within 4–6 months of the initial trauma. A tension-free, scar-free and mucosa-to-mucosa urethral anastomosis is critically important for a successful outcome. Urethral defects shorter than a third of the bulbar urethral length can usually be repaired by a simple perineal operation, while longer defects usually need an elaborated perineal or perineo-abdominal transpubic procedure. The finest suture that provides adequate strength should always be used for a urethral anastomosis, generally 3/0 polyglactin 910 for adult patients and 4/0 for children. In transpubic urethroplasty, an omental wrapping of the intra-abdominal segment of the bulbar urethra and the site of anastomosis is mandatory.

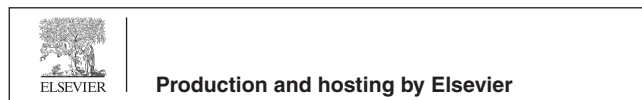
Conclusions: Anastomotic repair of a PFUI entails various surgical components, and the importance of each of these should not be underestimated. Careful attention to these surgical components is mandatory for a successful outcome after repair.

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Introduction

The delayed repair of a pelvic fracture urethral injury (PFUI) continues to be a surgical challenge and can be considered as one of the most difficult management problems in urology. This is not only because of the

awkward location behind the pubic bone, but also more importantly because urological and sexual problems might result from inappropriate management [1]. A PFUI is usually in the form of a fibrous segment formed between the distracted urethral ends. Thus excision of this segment and an end-to-end urethral anastomosis is generally accepted as the ideal treatment in this case. Success rates after a sufficiently long follow-up have often been reported from specialised centres to be >90% [2–6]. In pursuit of a successful outcome there should be careful attention to certain perioperative details. This review is an attempt to develop a plan that would optimise the results of posterior urethroplasty.

Timing of the repair

The interval between the initial urethral injury and definitive repair of the resulting urethral stricture or defect depends on the magnitude of the pelvic trauma. Generally, the repair should be postponed until the local healing reaction is complete. Turner-Warwick [5] suggested that this process takes at least 3–4 months, and longer if the haematoma is large. Webster [6] advised that repair should be delayed for 4–6 months. In the present author's experience the minimum interval is 6 months after most PFUIs, and in cases of severe injuries, the interval can be extended to ≥ 8 months. If an earlier repair is attempted, as was done in one of my patients after an interval of 5 months, the surgical dissection will be more difficult and the chance of a successful result might be less [7].

Patient's position at surgery

Under epidural or caudal anaesthesia and a cover of antibiotic according to the result of urine culture, and with the patient in the lithotomy position, the perineum and subumbilical regions are prepared as a single operating field. This is not only because of the probability of using the already present suprapubic tract for antegrade cysto-urethroscopy, but also because the progression of a perineal operation into a combined perineo-abdominal procedure might be deemed necessary [5]. Some authors advocate the exaggerated lithotomy position for this procedure. Others, including the present author, use the ordinary lithotomy position, as exposure of the prostate should be limited to the anterior aspect, to reduce the risk of erectile dysfunction attributable to injury of the nervi erigentes surviving the original trauma.

Identifying the proximal urethra

The proximal urethra is traditionally identified by the blind passage of an antegrade sound through a suprapubic catheter tract in the course of perineal urethroplasty. However, this method is not reliable in the presence of a

para-urethral bladder-base fistula, because the sound might slip into the false passage, which will be mistaken for the prostatic urethra and will be wrongly anastomosed to the anterior urethra [5]. Certainly the false passage can be diagnosed on urethrography and MRI by detecting two parallel tracts within the prostate. However, it is not easy to discriminate the false tract from the true prostatic urethra on either imaging study [8]. In such cases a correct anastomotic repair can be made by using suprapubic cysto-urethroscopy to recognise the prostatic urethra by identifying the verumontanum [5,9].

Excision of scar tissue

The complete excision of scar tissue is an essential component of a successful anastomotic repair of a PFUI [3–5,10,11]. Importantly, scar tissue usually implicates the apex of the prostate [3,5,10]. This requires meticulous retrograde excision of the prostatic apex until healthy-looking prostatic tissue is reached before making the urethral anastomosis (Fig. 1). The widely accepted strategy for making the anastomosis once the lumen of prostatic urethra is visible, after cutting on the antegrade sound and without excising scar tissue, should be abandoned. In a previous study using a multivariate analysis, the complete excision of scar tissue had an independent significant effect on the outcome after perineal posterior urethroplasty, with an odds ratio of 122 [12]. This means that a patient who has had the scar tissue completely excised is >120 times more likely to have a successful outcome than a patient with an incomplete excision. The scar tissue can be completely excised via the perineum in most cases. However, in the presence of a para-urethral false passage extending into the bladder base, a perineo-retropubic approach is required for complete excision of the scar tissue [9].

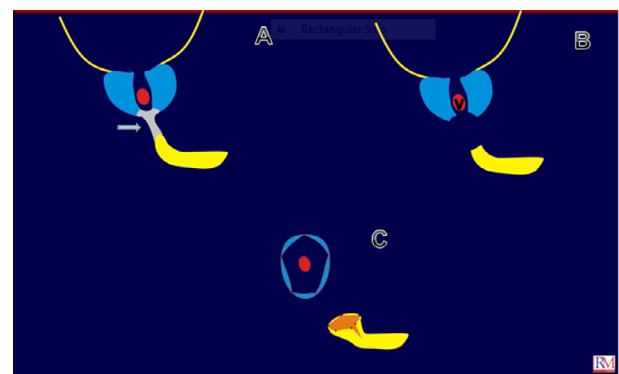


Figure 1 Complete excision of scarred tissue (grey) including the apex of the prostate (blue) to a level just short of the verumontanum (red). Then spatulation of the two urethral ends and fixation of their mucosae before anastomosing the bulbar urethra (yellow) to the prostate. From [3] with permission.

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