

# SURGICAL TECHNIQUE

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## Perineo-penile Degloving Exposure in Quartey's Urethroplasty: A Preliminary Report .

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### ABSTRACT

**Objective:** To present a technique of stricture exposure in Quartey's urethroplasty.

**Methods:** A retrospective analysis of case files of seven patients that underwent perineo-penile degloving (PPD) exposure for Quartey's urethroplasty was done and formed the basis of this communication. The perineo-penile degloving exposure involves a midline perineal incision to expose the bulbar urethral and a circumcising incision to deglove the penis which is later delivered to the perineum through the retro-scrotal tunnel. The urethroplasty is then done in a single operation field.

**Results:** Seven patients with long segment urethra stricture were repaired using PPD exposure during the study period. The age ranged from 35 to 70 years with a mean of  $48.6 \pm 11.1$  years. The peno-bulbar site was involved in six (85.7%) of the patients. The mean intra-operative length of the stricture is  $7.6 \pm 1.5$  cm. All the patients had Quartey's flap for their reconstruction under spinal anaesthesia with mean operation time of  $3.16 \pm 0.50$  hours (range 2.30 – 4.00 hours). They all had ventral on-lay repair except for one patient who had tubularization of the flap and anastomosis. Three of the patients had excellent short-term outcome. However, one patient developed slight distal penile skin necrosis, two patients had perineal wound infection and one patient could not void despite patent urethra post-operatively. Of the patients, only one had extravasation of contrast on pericatheter urethrogram which warranted leaving the urethral catheter for one more week. The mean follow-up period was  $8.3 \pm 4.5$  months with a range of 3 to 14 months. There has been no evidence of recurrence clinically or urodynamically thus far.

**Conclusion:** PPD is convenient and allows tension-free, water-tight reconstruction in a single operation field with a comparable short-term outcome.

**Key words:** urethral stricture, Quartey's urethroplasty, perineo-penile degloving, exposure.

### INTRODUCTION

Urethral Stricture Disease (USD) contributes significantly to the causes of bladder outlet obstruction (BOO). Post-inflammatory strictures are usually of long segment, they often result from previous gonococcal (and non-gonococcal) urethritis or lichen sclerosus (balanitis xerotica obliterans) and could be of complex variety. It is commoner in the non-industrialized countries of the world.<sup>1-3</sup>

Repair of such long segment USD often requires tissue transfer techniques in a single-stage (single tissue or combination of tissues) or a multistage approach.<sup>4</sup> The need for adequate exposure of the urethra, both the pendulous and bulbous urethra, is paramount to the surgical repair.<sup>5</sup> Hitherto, exposure was achieved by perineal incision for the bulbous urethra and a mid-raphe ventral approach to the pendulous urethra, which may or may not require bivalving the scrotum.<sup>4,6</sup> The classical exposure in the Quartey's circular penile fasciocutaneous island flap involves an incision in the perineum to expose the bulbar urethra and a circumcising incision to raise the fasciocutaneous flap which is then tunneled into the perineum for the reconstruction.<sup>6</sup> Perineo-penile

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degloving (PPD) exposure allows full length exposure of the entire anterior urethra in one operative field and may offer some advantages to repairing these complex strictures<sup>5</sup>. We describe our preliminary experience in 7 patients managed using PPD exposure for their urethroplasty.

## MATERIALS AND METHODS

### Setting

The two institutions; university of Ilorin teaching hospital (UIITH), Ilorin and the federal medical centre (FMC), Gombe, are tertiary health institution and research centres in North-Central and North-Eastern parts of Nigeria respectively.

### Patients

The case files of 7 consecutive patients managed, by one of the authors (AAA), for long segment anterior USD using PPD exposure for repair between January 2007 and May 2008 were retrospectively reviewed and form the basis for this communication.

The data extracted includes age, site of stricture, the intra-operative estimated length of stricture, tissue used for repair, the pre-and post-operation uroflowmetry, the post-operation complication, the need for urethra dilatation or Re-do procedure and the follow-up period.

### Technique

The patient is positioned in lithotomy position, usually under spinal anaesthesia. A 0 silk glans traction suture is placed and the stricture segment and length is assessed using an antegrade bougie for the proximal limit and a well lubricated 20FR Foley catheter for the distal limit.

A mid-raphae perineal incision is used to expose the bulbous as well as the proximal part of the penile urethra; the urethral induration is assessed to further give a clue to the stricture length. It is advised at this stage to avoid stricturotomy because the spongy tissue surrounding the urethra will bleed and adequate haemostasis is often difficult to achieve, figure 1.

The flap width is carefully measured based on the grade of the stricture on the retrograde urethrogram. The distal marking of the flap is made just proximal to the coronal sulcus and the width of the flap is determined by the circumference of the stricture to be covered; to avoid redundancy the flap width is measured on full stretch skin and should not exceed.



**Figure 1:** perineal incision to expose the bulbar urethral



2a

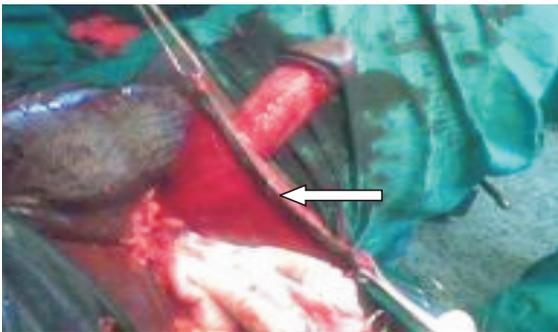


2b

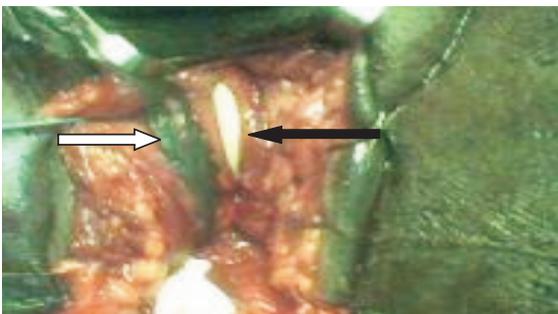
**Figure 2 a and b:** the width of the flap determined by defect to be covered.



**Figure 3:** the degloved penis and the raised flap



delivered to the perineum  
**Figure 4:** showing the flap on its pedicle (white arrow)



**Figure 5:** white arrow shows flap anastomosed to one side of Native urethra with 16F Foley catheter in-situ (black arrow)

25mm, figure 2.

A circumcising degloving penile incision is made on the distal marking of the flap using size 15 blade and deepened to the Buck's fascia; this allows easy degloving of the penile skin with the aid of blunt and sharp dissection to the root of the penis.

Another circumferential incision on the proximal marking of the flap is made and deepened only to the Tunica Dartos. This allows the penile skin and the

Dartos fascia to be carefully dissected off the Tunica Dartos which carries the blood supply to the island of the penile skin. Care is being taken to preserve the subdermal vascular plexus, which is superficial to the Dartos fascia and supplying the penile shaft skin, to avoid skin necrosis. The degloved penis, together with the flap, is then delivered to the perineal wound through a retro-scrotal tunnel, figure 3.



**Figure 6:** completed closure



**Figure 7:** RUCG of one the patients showing multiple long segment stricture involving bulbar and proximal penile urethral.



**Figure 8:** RUCG of the patient that had tubularization of the penile island fasci-cutaneous flap (Quartey's) to repair the stricture

This manoeuvre allows for complete mobilization of the flap pedicle proximally and thus preventing ventral bowing of the urethra and/or penile torsion, which are difficult to achieve when mobilizing the proximal part

of the flap pedicle behind an intact scrotum.

The ring of the island flap and its pedicle is then split in the midline, usually on the ventral aspect, and rotated to either of the side of the penis for the onlay reconstruction, figure 4. With an average circumference of adult penis being about 10cm, a reliable 10cm length of flap is assured.<sup>2</sup> At this point stricturotomy of the entire length of the stricture is done ventrally incorporating the grey areas of the urethra and biopsy of suspicious area of the urethra taken. The proximal and distal urethra stomas are calibrated to size 28/32F of metal bougie. The flap is sutured onlay, in a single operation field, to the native urethra, which may be incised in the midline (Snodgrass) to further widen the lumen, over a 16-FR Foley catheter, figure 5. A continuous 5/0 vicryl anastomosis with intermittent locking of the suture, to prevent purse-string effect, is done on one side and interrupted suture of the same strength of vicryl on the other side. The excess skin flap is excised and the pedicle is spread across the anastomosis as the second layer of suturing and tagged to the corpora cavernosa.

The penis is returned to its original position after completion of the reconstruction and wound is closed in layers with a perineal wound drain, figure 6. Pressure dressing is applied to the perineal wound to prevent haematoma. A full length occlusive penile dressing is applied, with the penis in vertical position to encourage venous drainage and padded with enough gauze; just enough to prevent sub-dartos haematoma and at the same time to avoid penile skin necrosis.

Post-operatively, patient is placed on analgesia and antibiotics which are changed to oral route on the 2<sup>nd</sup> day of operation; it is continued for a week. Anti-thrombotic agents are given as deemed necessary. The penile occlusive dressing is changed on the 2<sup>nd</sup> day of operation.

Perineal wound drain is routinely removed on the 3<sup>rd</sup> day of surgery, except otherwise indicated. No active measure is done to prevent any post operative erection. The perineal and penile stitches are removed on the 8<sup>th</sup> day of operation.

Peri-catheter urethrogram is done at 21-day post-operation and uroflowmetry at 3, 6, and 12-months of follow-up.

## RESULTS

Seven patients with long segment, post-inflammatory, bulbar and peno-bulbar urethra stricture had repair using PPD exposure during the study period. The age ranged from 35 to 70 years with a mean of  $48.6 \pm 11.1$  years. The peno-bulbar site is involved in six (85.7%) of the patients with only one limited to the bulbous urethra, figure 7. The four patients managed in one of the centres with facility for uroflowmetry had their pre-operation uroflowmetric assessment done; two of them had no flow while the other two had maximum flow rate (Qmax) of 6 and 9mls/sec respectively.

The mean intra-operative length of the stricture was  $7.6 \pm 1.5$ cm with a range of 5.0 to 10.0cm. All the patients had penile island fascio-cutaneous flap for their reconstruction under spinal anaesthesia with mean operation time of  $3.16 \pm 0.50$  hours (range 2.30 – 4.00 hours). They all had ventral on-lay repair except for one patient who had tubularization of the flap and anastomosis, figure 8.

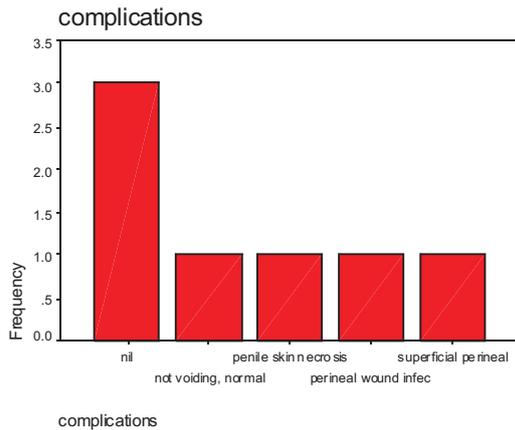
The peri-operative period was uneventful in all patients and three of the patients had excellent short-term outcome. However, one patient developed slight distal penile skin necrosis which healed without need for skin graft. Two patients had perineal wound infection; one of them cleared with antibiotic and wound dressing while the other sustained scrotal superficial burns from Sitz's bath. One patient could not void despite normal sensation of bladder fullness and urethro-cystoscopy revealed an obstructing prostate, figure 9.

Of the patients, only one had extravasation of contrast on pericatheter urethrogram which warranted leaving the urethral catheter for one more week. All repairs were calibrated with well lubricated size 20F (in 1 patient) and 22F (in 6 patients) after urethral catheter removal.

The mean follow-up period was  $8.3 \pm 4.5$  months with a range of 3 to 14 months. Except for the patient with evidence of prostate enlargement, there has been no evidence of recurrence clinically or urodynamically thus far.

## DISCUSSIONS

The surgical treatment of urethral stricture is continually evolving and since the superiority of one approach has not yet been clearly defined over the others, there is renewed controversy over the best



**Figure 9:** Bar chart showing the short-term complications.

means of reconstruction.<sup>1,2</sup> As the argument progresses little is mentioned, if any at all, of the significance of stricture exposure in these approaches.<sup>2-4,7</sup>

Although the standard treatment for short segment anterior urethral strictures is segmental excision with spatulated reanastomosis, complex strictures measuring more than 2–3 cm are often not amenable to resection. For intermediate and long urethral strictures, urethral substitution via the use of penile island skin flaps has become a popular and effective therapeutic option.<sup>2,3,7</sup>

Since the initial description of the penile/preputial island flap urethroplasty for urethral stricture by Quartey,<sup>8</sup> several modifications have been described essentially to alleviate one or the other shortcomings noted.<sup>6,9,10</sup> However, none of these modification has attempted to tackle the issue of the stricture exposure and the need to reconstruct the stricture in a single operation field without the scrotal interposition with its possible limitations.

The present study corroborated the findings of previous workers that post-inflammatory stricture is still commoner in the non-industrialized nations<sup>1-3</sup> and are usually of long segment. With a mean intra-operative stricture length of  $7.6 \pm 1.5$  cm, it is apparent that these strictures can only be amenable to substitution urethroplasty. Even though, some patients had buccal mucosa graft urethroplasty and they were excluded from the present study; the PPD can be most conveniently and effectively used for the exposure of the stricture and subsequent

reconstruction with buccal mucosa.

There has been no significant difference in the age range of the affected population in this present study as compared to previous reports.<sup>1,3,7-9</sup> The site of the stricture and the length are consistent with the location of the paraurethral glands which has been implicated in the pathogenesis of post-inflammatory stricture and has been extensively studied and documented by Blandy and other workers.<sup>3,11</sup>

Three patients in this study had excellent short-term outcome. The complications reported in the other patients are comparable to those reported in other series,<sup>3,6</sup> they are not directly related to the retro-scrotal tunneling of the degloved penis which is specific for PPD. The retro-scrotal tunneling manoeuvre allows for complete mobilization of the flap pedicle proximally and thus preventing ventral bowing of the urethra and/or penile torsion, which are difficult to achieve when mobilizing the proximal part of the flap pedicle behind an intact scrotum.<sup>6</sup>

Although, the mean operation time seems to be on the high side, it is the authors belief that the benefit that could accrue from this technique outweigh the probably insignificant difference in the duration of the procedure. In conclusion, perineo-penile degloving exposure is quite convenient, it allows a tension-free, water-tight reconstruction of the stricture in a single operation field with a comparable short-term outcome.

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