African Journal of Urology (2017) **23**, 68–71

African Journal of Urology

Official journal of the Pan African Urological Surgeon's Association
web page of the journal

www.ees.elsevier.com/afju
www.sciencedirect.com

Original article

Retrograde pericatheter urethrography (RPU) technique and its clinical use after urethroplasty: A single center experience

A. Bansal *, V. Singh , R. Sinha

Department of Urology, King George Medical University, Lucknow, Uttar Pradesh 226003, India

Received 27 July 2015; received in revised form 24 January 2016; accepted 7 March 2016
Available online 4 July 2016

KEYWORDS
Catheter removal;
Contrast;
Retrograde pericatheter urethrogram;
Urethral stricture;
Urethroplasty

Abstract
Objective: To describe our technique of retrograde pericatheter urethrography (RPU) and its clinical use after urethroplasty.
Subjects and methods: Between January 2008 and December 2013, 387 patients with urethral stricture underwent urethroplasty at our center. A total of 343 of these patients underwent RPU 3 weeks post-operatively. For this retrospective study their files were evaluated with regard to: demographics, duration of symptoms, site, mean length of stricture, type of surgery, RPU findings, contrast-medium related complications and need of re-intervention. The eventual surgical success was defined as asymptomatic voiding with no clinical evidence of residual stricture (good flow rate and no residual urine) until the last follow up.
Results: Follow up ranged from 8 to 41 (mean 28) months. The mean duration of symptoms was 4.8 months. The mean stricture length, as seen on radiography, was 2.1 cm. 183 patients (53.3%) underwent anastomotic urethroplasty, while 160 (46.6%) underwent substitution urethroplasty. RPU showed urethral healing in 292 (85.2%) and contrast extravasation in 51 (14.8%) patients. No contrast-medium related complications were reported. Re-intervention was needed in 7.2% (21/292) of the patients who showed normal urethral healing and in 74.5% (38/51) of the patients who showed contrast extravasation on RPU. By the time of the last follow up the overall success rate was 82.7% (284/343 patients).
Conclusion: RPU is the most useful radiological diagnostic method for evaluating the appropriate time for catheter removal after urethroplasty. It helps to assess urethral healing and patency after urethroplasty. Prolonged catheterization in patients showing contrast extravasation may be helpful.

* Corresponding author.
E-mail address: ankurbansaldmc@gmail.com (A. Bansal).

Peer review under responsibility of Pan African Urological Surgeons' Association.

http://dx.doi.org/10.1016/j.afju.2016.03.002

Introduction

Urethral stricture mostly results from pelvic fracture, straddle injuries or urethral manipulation. It can be seen in patients of all ages with a marked increase in those older than 55 years [1,2]. Urethroplasty is the gold standard treatment for urethral stricture disease. The presence of a urethral catheter with or without suprapubic catheter (SPC) may play a role in postoperative morbidity. The usual time of catheter removal after urethroplasty varies from 7 to 21 days, depending on urethral healing [3–5]. However, there is a paucity of literature on how to assess urethral healing after urethroplasty and when to remove the urethral catheter [6]. Retrograde pericatheter urethrography (RPU) has been reported to be useful in assessing urethral healing at the anastomotic site [7]. Therefore, this study was carried out in order to verify whether this technique can be used routinely as a diagnostic tool for the evaluation of the appropriate time for catheter removal after urethroplasty and whether it can predict the success of urethroplasty.

Subjects and methods

We performed a retrospective review of prospectively collected medical records of patients who underwent urethroplasty for urethral stricture at our institution between January 2008 and December 2013. All patients underwent routine investigations including complete hemogram and urine culture. Preoperative assessment of the stricture was done subjectively using uroflowmetry, and radiologically by retrograde urethrography and micturating cystourethrography (RGU/MCU). The patients underwent end-to-end urethroplasty or substitution/buccal graft urethroplasty, depending upon the stricture length.

RPU was performed 3 weeks postoperatively before removal of the urethral catheter. In cases showing a normal urethral outline (Fig. 1), the urethral catheter was removed. The suprapubic catheter, if present, was clamped and removed after 1–3 days. In cases showing contrast extravasation (Fig. 2), the urethral catheter was kept for another one to three weeks, depending on the degree of extravasation which was subclassified into 3 grades (mild, moderate, severe) (Table 1). The patients were assessed for any pain, fever and infection during or after RPU.

The patients were followed up regularly at 3-month intervals and evaluated subjectively for the presence of obstructive symptoms, recurrent urinary tract infection (UTI) and the presence of suprapubic fistula. Objective assessment consisted of dynamic urethrography and VCUG with endoscopy, if needed. The eventual surgical success was defined as asymptomatic voiding with no clinical evidence of residual stricture (good flow rate and no residual urine) at the time of the last follow up. The following data were collected: demographics, duration of lower urinary tract symptoms, site of stricture, mean length of stricture, type of urethroplasty, RPU finding, contrast-medium related complications and re-intervention.

Table 1 Grades of extravasation on RPU.

Grade	Degree of extravasation on RPU	Timing for removal of the urethral catheter after RPU
Grade 1	Mild degree	1 week
Grade 2	Moderate degree	2 weeks
Grade 3	Severe degree	3 weeks

RPU procedure

RPU was performed under antibiotic coverage on the 21st postoperative day. With the patient in the lateral steep position, equal amounts of saline and contrast material (76% urograffin; 1 mL urograffin 76% contains 0.1 g sodium diatrizoate and 0.66 g meglumine diatrizoate) were injected through a small feeding tube into the pericatheter space (between the urethral lumen and the catheter). The patient was then asked to flex his right leg at the knee joint and to abduct it at the hip joint, and an anteroposterior pelvic radiograph was taken (Fig. 3).

Results

During the 5-year period, 387 male patients underwent urethroplasty for urethral stricture disease. RPU was performed in 343 patients with a mean age of 30.8 years. The duration of the symptoms at presentation was 3–7 (mean 4.8) months. The stricture length, as seen on radiography, varied from 1 to 5 (mean 2.1) cm. The location of the urethral stricture was bulbar in 142 (41.3%), bulbar and pendular in 75 (21.8%) and pendular in 56 (16.3%) patients, while a pelvic fracture urethral distraction defect (PFUDD) was seen in 70 (20.4%) patients. Forty-three patients reported a history of previous urethral surgery. 183 (53.3%) patients underwent end-to-end anastomotic urethroplasty, while 160 (46.6%) underwent substitution urethroplasty. The follow-up period ranged from 8 to 41 (mean

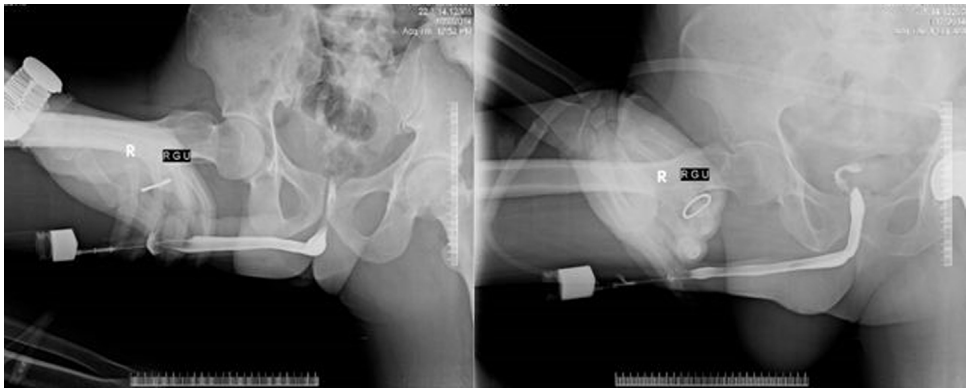

Fig. 1 RPU showing normal urethral healing.