Use of Mitrofanoff and Yang–Monti Techniques as Ureteric Substitution for Severe Schistosomal Bilateral Ureteric Stricture: A Case Report and Review of the Literature

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ABSTRACT
Distal ureteric stricture is a common complication of urinary schistosomiasis which is a disease more prevalent in the tropics and subtropics. The surgical management of this complication is more challenging when it affects more than half of both ureters. We report the case of a 17-year-old Nigerian with a long standing recurrent painless terminal hematuria associated with bilateral colicky loin pains. Ultrasound scan showed bilateral hydro ureters and hydro nephrosis with deranged biochemical renal function. The patient had bilateral tube nephrostomy and antibiotic therapy. Definitive bilateral ureteric substitution was done using Mitrofanoff technique for the right ureter and Yang–Montie technique for the left ureter. The patient’s renal function became normal and he was discharged home without complication. The related literatures were reviewed. Surgical nonurothelial ureteral substitution is necessary for long, extensive, severe bilateral ureteric strictures so as to prevent progressive renal damage and end stage renal failure.

KEYWORDS: Appendix, intestine, schistosomiasis, stricture, ureter, ureteric substitution

INTRODUCTION
Schistosomiasis is one of the most prevalent parasitic infestations worldwide and highly endemic in Africa and Middle East.¹⁻³ Ureteric obstruction as a result of ureteric stricture is a late presentation of severe schistosomal infestation of the urinary tract.³ This may be complicated by secondary bacterial infection, renal colic, hydro nephrosis and renal failure.¹⁻³ The ureteric fibrosis is usually bilateral and commonly affects only the distal 1/3 of the ureters but in this case study, more than ½ of both ureters were affected. Hence, substitution of these severely fibrosed ureters require a more technically demanding surgical procedure. We report a case of severe schistosomal bilateral long segment ureteric stricture and review of the literature.
Bilateral distal 1/3 ureteric obstruction is a common complication of urinary tract Schistosomiasis, a specific trait, *S. haematobium* which causes chronic inflammatory reaction resulting in to ureteral fibrosis. [8] Idiopathic and tuberculous retroperitoneal fibrosis may give similar ureteral stricture and obstruction. [2,3] Yeboah et al. [4] also reported 1/4 and 1/5 schistosomal ureteric obstructions, in this case we found severe fibrosis of distal ¼ of the left and 1/5 of the right ureters, respectively. Fibrotic ureteral strictures lead to hydronephrosis and dysuria, proteinuria and haematuria are the most common clinical presentation. [1] Late manifestations include renal colic, ureteral obstructions and hydronephrosis [Figure 1], and renal failure. [10] Pre-operative anatomical and functional assessments are very important and are best often accomplished by renal ultrasonography, ureteroscopy, Intravenous and retrograde pyelography, and spiral computerized tomography (CT) scanning with delayed contrast views. The degree of ureteric obstruction and relative renal function are best assessed by nuclear renal scanning. In our own setting were able to use the intravenous urogram [Figure 1] and abdomino pelvic ultrasound scan reports from the referral hospital in assessing the patient. Preliminary percutaneous bilateral tube nephrostomy drainages were carried out in order to relieve pressure on the kidneys, and had improved the deteriorating renal function of the patient. [11] However, we do not have nuclear renal scan in the centre to determine the relative renal function of the kidneys. There are various options of treating benign ureteral strictures, depending on the location and its length, ranging from Ballon dilatation, endoureterotomy to open surgical managements, such as psoas hitch, Boari flap, ureteroneocystostomy, transureteroureterostomy, renal mobilization, autotransplant, and then to laparoscopic and robot-assisted laparoscopic repair. [12] Long term chemotherapy has also being advocated. [1,2] A course of Praziquantel and Artemether can be given in order to forestall further progression of the complication and intralesional injection of steroid in long segment strictures has also being advocated. [1,2,8] The time period for effective chemotherapy required may not be possible in severe ureteral strictures. [2,3] The patient had a course of praziquantel 40 mg/kg postoperatively. Intestine substitution was the best option for this patient with severe long segment bilateral ureteral strictures [Figure 1]. Both Mitrofanoff and Yang–Monti principles were basically used as urinary diversion for functional and continent stoma both in adults and children. [9] We used Mitrofanoff’s principle by substituting strictured right ureter with the appendix [Figure 4] and Yang–Monti’s principle on the left. Yang–Monti used 1–2 cm length of small intestine, but in this case, 5 cm of ileum was prepared and tabularized to make up a length of 18 cm to substitute the left strictured ureter [Figures 2 and 3]. Both techniques were done with no intra or postoperative complications. These techniques were employed in wide arrays of clinical situations but there was no reported case of combining both techniques in substitution of long segment strictured ureters [Figure 5]. [7,8] Staged ureteral substitution would have been considered but due to its attendant morbidity, inability to determine relative function of each kidney and financial
constraint, one stage procedure was considered. Options for right ureteric substitution in the absence of appendix include the use of caecum or ascending colon reflected and rotated superiorly to ensure isoperistaltic orientation. Long segment of ileum can also be used from left kidney to the right kidney and then to the bladder. Long term follow up in some series showed that reconfigured small intestine can equally promote effective efficient urine flow mechanism that persists for long periods with minimal
or no metabolic complications. The Platino–Leadbetter antireflux technique was done for the bilateral ileal anastomoses to the bladder, however, the usefulness of tunneled anastomoses in adult is probably small because the risk of obstruction is likely to be greater than the risk of reflux. The patient was followed up for over a year and only serum electrolyte, urea and Creatinine, urine microscopy, culture and sensitivity, and abdomino–pelvic ultrasound scan were done which showed no recurrent infection or evidence of obstruction. Patient could not do intravenous urogram due to financial constraint. The future of ureteral stricture management may involve the use of other non urothelial tissues, such as buccal mucosa, as grafts or vascular pedicle flaps. Other innovative tissue engineering technology, artificial ureter crafted from silicone–polyester and some groups have used xenogenic acellular collagen membranes such as porcine small intestine submucosa for ureteral substitution.

Transverse tabularized bowel tube is an effective and efficient substitution of severe long segment strictured ureter with sustained good long term results.

REFERENCES


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Announcement

Android App

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