SIMPLE CYSTECTOMY AND ORTHOTOPIC CONTINENT URINARY DIVERSION FOR NON MALIGNANT UROLOGICAL CONDITIONS: OUR LONG TERM EXPERIENCE

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Abstract

Chronic urinary schistosomiasis may lead to obstructive uropathy, contracted bladder secondary to ureteral calcific fibrosis. Appropriate surgical intervention , guided by renal function, bladder capacity and meticulous follow-up may lead to excellent long term urogenital outcomes , following simple cystectomy with orthotopic continent neocystoplasty

CYSTECTOMY AND URINARY DIVERSION FOR NON-MALIGNANT BLADDER DISORDERS: OUR EARLY EXPERIENCE

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Abstract:

Chronic urinary schistomiasis may present with obstructive uropathy, contracted bladder, among others as a result of extensive ureteral fibrosis. Surgical intervention is guided by renal function, severity of ureteral involvement and bladder capacity during close follow-up. Restoration of bladder capacity with orthotopic continent Urinary diversion and sparing of the trigone, preservation of renal function is possible in patients with progressive manifestations of chronic schistosomiasis. Functional and quality of life outcomes are markedly improved in carefully selected patients undergoing continent urinary diversion with a follow up period of more than fifteen years.

Cystectomy and Urinary Diversion for Non-malignant Bladder Disorders: Our Early Experience

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50 key word clinical message

Chronic urinary schistosomiasis affects mainly the bladder and ureters. Early recognition and correction of obstructive uropathy during follow-up is fundamental in order to preserve renal function in patients with schistosomal obstructive uropathy. Simple cystectomy and orthotopic neobladder is a viable treatment option in patients with a severely contracted bladder and good renal function.

INTRODUCTION

Radical cystectomy and urinary diversion for bladder cancer dates back to the 1920s.[1] It was only until the latter part of the 20th century that cystectomy became an acceptable surgical option for patients with benign bladder disorders[2]. Data regarding perioperative morbidity and long term follow-up after simple or partial cystectomy is derived mainly from small case series and case reports. We report our experience with a patient whom we closely followed-up and managed for chronic progressive schistosomal obstructive

uropathy. Emphasis is made on adequate preoperative assessment, counselling, and functional outcomes and on the postoperative long-term follow-up of patients undergoing cystectomy and urinary diversion.

THE CASE

A 55-year-old male was referred by his General practitioner for lower urinary tract symptoms. He had a chronic history of suprapubic pain, urinary frequency and pain after sexual intercourse. His symptoms had failed to improve on several courses of antibiotics. He had a positive history of having been treated for schistosomiasis in childhood. He also admitted to treatment of a sexually transmitted infection in the past. His examination findings were unremarkable. USS showed a left hydroureteronephrosis, normal bladder capacity and an insignificant PVR. A baseline DTPA renogram showed split renal function of 17% in the left kidney. He underwent an urethrocystoscopy and bladder biopsy and left double-J stenting. Noted on cystoscopy were extensive sandy patchy appearances and areas with erythematous lesions. During follow-up, his split renal function in the left kidney did not improve despite the relief of obstruction. He also continued to have recurrence of his LUTS and left flank pain. In view of this a left simple nephrectomy was done for a silent symptomatic kidney. He was under surveillance every 6 months. His lower urinary tract symptoms continued to recur. After 10 years of follow-up, he had evidence of a severely contracted bladder and right hydroureteronephrosis. His DTPA renal scans showed deteriorating function of the solitary right kidney. A simple cystectomy for extensive bladder schistosomiasis, noncompliant bladder (contracted bladder) and deteriorating renal function was done. A Hartmann W pouch was fashioned from the distal ileum and an ureteroneocystoplasty was accomplished. The postoperative recovery was uneventful. The patient required intermittent catheterisation and regular bladder washout in the early months postoperatively.

The patient is now more than 15 years post urinary diversion. The quality of life according to the patient is satisfactory. He no longer has bothersome LUTS. His recent USS showed compensatory hypertrophy of the right kidney with no evidence of hydronephrosis nor hydroureter. The bladder volume improved remarkably over the years from 200 cm3 to a maximum of above 500cm3. The post void urine residual has remained insignificant over the years. His electrolytes are within normal limits and the estimated GFR was 80ml/min.

TABLE 1: SPLIT RENAL FUNCTION FROM FIRST PRESENATION TO NEPHRECTOMY

DATE	LEFT KIDNEY	RIGHT KIDNEY
FIRST PRESENTATION	18%	82%
3 MONTHS	20%	80%
6 MONTHS	17%	83%
9MONTHS	18%	82%
12MONTHS	15%	85%
18MONTHS	15%	85%

TABLE 2: BLADDER VOLUME, POSTVOID RESIDUAL AND ESTIMATED GLOMERULAR FILTRATION RATE (GFR) POST NEOBLADDER

DURATION AFTER NEOBLADDER	BLADDER VOL ON USS (millilitres)	PVR ON USS (millilitres)	ESTIMATE
3 MONTHS	230	110	
6 MONTHS	225	130	
9 MONTHS	250	120	
1 YEAR	610	470	
2 YEARS	600	150	
5 YEARS	525	80	
10 YEARS	720	67	
15 YEARS	760	<50	

DISCUSSION

Chronic urinary schistosomiasis is characterised by fibrosis in the distal ureters and bladder wall. Fibrosis is a result of immune reaction to egg deposition in the wall of the bladder and ureters. The resulting lesions are ureteric strictures in the pelvic part of the ureter leading to obstructive uropathy. In the bladder this may result in progressive ischaemia and muscle degeneration ultimately causing a non-compliant bladder. The presented patient had initially left ureteric obstructive uropathy and eventually developed a non-compliant bladder.

In a severely contracted bladder (i.e. bladder volume less than 100 cm3), augmentation cystoplasty is indicated[3,4]. Simple cystectomy with urinary diversion for a contracted bladder secondary to chronic schistosomiasis has been described in the literature by Ghoneim et al[4]. Continent or incontinent forms of diversion are chosen depending on the patient's underlying pathology and its method of treatment. As much as offering a functional benefit, orthotopic urinary diversion also offers psychological benefits for the patient[5]. Decision for orthotopic neobladder was based on the patient's underlying disease and its form of treatment. Our patient was young, well-motivated, had good renal function and was compliant to treatment follow-up. Adequate pre-operative assessment, investigations and patient preparation were carried out. With proper pre-operative counselling and patient preparation, patient satisfaction is usually achieved in most patients regardless of the type of diversion employed[5,6].

The aims of urinary diversion in our patient can be summarized as follows: preservation of the upper urinary tract, achievement of urinary continence, adequate reservoir emptying and avoidance of urinary tract infections and other complications. The neobladder initially had low reservoir volume and high post void residual. Episodes of cystitis were encountered and managed with antibiotics after urine cultures. They had to initially undergo clean intermittent catheterization. Endoscopy was done every six months. The post void residual significantly dropped over time and now the patient can completely void as evidence by the latest ultrasound scan results. The creatinine and glomerular filtration rates improved remarkably after urinary diversion and remains relatively constant more than 10 years after the procedure was done.

Another important functional outcome in neobladder patients is that of continence. The age of the patient and preservation of autonomic innervation during surgery are key determinants of urinary continence. Overall daytime continence in large series is achieved in about 95% of patients whilst 66 to 93% will achieve night time continence at one year follow up[6–8]. Continence is more likely achieved with age less than 50 years as compared with age greater than 70 years[6]. Our patient was less than 50 years old at the time of urinary diversion. Urinary continence has been achieved in our patient; both day and night time continence.

Urinary retention also occurred in our patient especially early on in the first few months following surgery. This was successfully managed with clean intermittent catheterization; follow up endoscopy and ultrasound scan and early treatment of urinary tract infections. Other complications known to occur in neobladder patients and may cause urinary retention are urethral anastomotic stricture, ileal valve and subtotal resection of the prostate. None of these were noted on follow up endoscopy in our patient.

The terminal ileum remains the preferred bowel segment in orthotopic urinary diversion. It is associated with less metabolic consequences and dysentery, easier surgical technique, better nocturnal continence rate and a better functional protection of the upper urinary tract. The extent of metabolic problems in neobladder patients decreases over time[9]. It is thus prudent in the early postoperatively period to adequately hydrate the patient and monitor acid-base and electrolyte balance.

Compromised sexual function is a cause for concern following cystectomy and continent urinary diversion. Just like continence, nerve sparing surgery and age strongly correlates with sexual function after surgery. In nerve sparing cystectomy, 62% of men less than 50 years achieved sexual function compared to only 20% of men aged 70 to 79 years[6]. Our patient was young and had reported satisfactory sexual function on the IIEF score.

CONCLUSION

Continent urinary diversion yields excellent functional outcomes in carefully selected patients. It is thus important to know the type of continent urinary diversion suitable for each patient. Pre-operative evaluation and patient education are prudent if the goals of diversion are to be achieved. Orthotopic bladder substitution has good functional outcomes and also improves quality of life of the patient.

Consent

Written informed consent was obtained from the patient for publication.

Conflict of interest

None

Author Contribution

Cathbert Mudimu: involved in the case report design, subject research, consent, editing and writing.

Daud Athanasius Dube: involved in the case report design, subject research, and writing.

Ethical Approval

Ethical approval was exempted by our institution.

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