

Early Outcome of the Types of Urethroplasty in a Tertiary Centre in Northern Tanzania

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Abstract

Background

Urethral strictures remain a major problem in the developing countries unlike in the developed world. It is prudent to establish the success rates of various methods of urethroplasty in our regional setting.

Patients And Methods

Patients who underwent various types of urethroplasty at the Institute of Urology at Kilimanjaro Christian Medical Centre (KCMC) from February 2009 to April 2011 were involved in this hospital based descriptive, prospective, cohort study. The available options for urethroplasty were anastomotic, staged and substitution urethroplasties and were chosen on the basis of institutional protocol on site, number and length of stricture and recommended form of urethroplasty.

Urethral and suprapubic catheters were left insitu and on the third post operative day, urethral catheter

was spigotted. Patients stayed in the ward for seven days then discharged home for two weeks when they would come for urethral catheter removal on the 21st postoperative day.

Results

One hundred and five patients underwent urethroplasty. The age ranged from 4 years to 83 years with a mean \pm Standard Deviation of 45.8 \pm 18.5 years. Eighty-four point eight percent of the strictures were in the anterior urethra. The overall success rate for urethroplasty was 88.4%. The specific success rates were 87.3% for anastomotic, 92% for staged and 93% for substitution urethroplasty.

Conclusion

The urethroplasty success rate in KCMC compares favorably with other tertiary centers in the world. Substitution urethroplasty has the best outcome for stricture surgery.

Introduction

Urethral stricture is an abnormal narrowing of the urethra caused by the presence of circumferential scar consequent on infection or injury (1). It is a chronic and common urological problem in some areas and its management poses a challenge to Urologists (2). Urethroplasty is the gold standard for urethral stricture disease treatment (3).

A paper by Musau and Mteta 3 years ago assessed urethral strictures in our tertiary centre and recommended a study on the respective treatment methods (4). We share our findings on urethroplasty in this article.

Materials and Methods

Patients were diagnosed to have urethral strictures based on history, clinical examination and contrast imaging urethrogram. All those thus diagnosed

were informed about the study and requested to participate. An informed formal consent was then signed for the patient's data to be incorporated into the study. All patients had supra-pubic catheters in situ.

During surgery patients were put in low or exaggerated lithotomy position according to the location of stricture. Decision as to the procedure to do was determined by the cause, position and extent of the stricture. The length of stricture was determined intra-operatively with a standard measure. The available options for urethroplasty were anastomotic, staged and substitution urethroplasties and were chosen on the basis of the institutional protocol and not dependent on the operating surgeon.

Post-operatively urethral and supra-pubic catheters were left in situ. The urethral catheter

was spigoted on the third day after surgery. Patients stayed in the ward for seven days then discharged home for two weeks when they would come for urethral catheter removal on the 21st postoperative day.

Data was collected on patient age, cause of stricture, location of stricture, the length of stricture, urethroplasty technique used, complications that occurred after surgery and the immediate success of the procedure. The procedure was declared successful in short term if patient was able to void asymptotically after removal of the urethral catheter. We followed up our patients for two to twenty four months.

Results

One hundred and five consecutive patients underwent urethroplasty during the period of study. Their ages ranged from 4 years to 83 years with a mean \pm Standard Deviation of 45.8 ± 18.5 years. The leading causes of stricture were trauma (56.2%), post urethral discharge (33.3%) and balanitis xerotica obliterans 2.9%.

Eighty-four point eight percent of the strictures were in the anterior urethra. The commonest strictured area was in the bulbar urethra accounting for 68.4% of the cases.

Anastomotic urethroplasty technique was used in 66 (82.9%), staged in 25 (23.8%) and substitution in 14 (13.3%) patients. The substitution urethroplasties were done using buccal mucosa in 10 and Orandi flaps in four patients.

There was a strong correlation between urethroplasty technique and cause of stricture as was the length of stricture and urethroplasty done (both $p < 0.001$) as shown in Table 1.

Anastomotic urethroplasty was the preferred technique in all etiologic factors except the BXO that was managed by substitution or staged urethroplasty. Ninety-one point seven percent of the strictures up to 4cm were done using anastomotic urethroplasty. Those longer than 4 cm had almost three times the number of staged to substitution urethroplasty (75.8% vs. 24.2%) and no attempts at anastomosis. Those in the posterior urethra were almost exclusively managed by anastomotic urethroplasty with only one patient in this group undergoing substitution urethroplasty. Post-urethroplasty complications occurred in 40 patients in the period of study and follow up. There were four cases of scrotal hematomas in the immediate

post-operative period. In the intermediate period covered by ward stay and first month of follow-up, 12 patients had infection and 5 developed urethrocutaneous fistulas. Nineteen patients re-strictured, the earliest appearing 3 weeks after surgery. Membranous strictures were the majority in those that re-strictured, closely followed by the bulbar strictures as seen in Table 2. Three quarters of the re-stricturing occurred in patients undergoing anastomotic urethroplasty.

The overall success rate was 88.4%. The success rate was 87.3% for anastomotic urethroplasty, 92% for staged urethroplasty and 93 % for substitution urethroplasty.

Discussion

Urethral stricture disease is commonly found in males, and its management has undergone changes over time from regular dilatation, direct visual urethrotomy to urethroplasty, which has proven to be a cost effective primary intervention of the disease(3). Our high levels of supra-pubic catheterization, while clinically showing evidence of stricture disease, may point to poor health seeking behavior or inadequate urology care in the peripheral facilities. In the past, the causes differed from region to region with post-infectious urethritis dominating in most of the developing world and trauma in the developed world. In our study, as in the previous one by Musau and Mteta, trauma has become the leading cause in our setup (4). This may reflect the effect of antibiotic use in the treatment of genitourinary infection or an increase in traumatic episodes leading to urethral strictures. Iatrogenic trauma in urology is of particular concern and requires some attention in the prevention of its occurrence or attenuation of its effects when it occurs (5).

Urethroplasty techniques may be determined by the causative agent, the site and length of the stricture. Where two techniques can be successfully utilized, the surgeon's preference comes to play. For long, anastomotic urethroplasty held the sway because of its good outcomes. Our 62.9 % rate of anastomotic urethroplasty compares well with other centres with as low as 40.8% especially with the understanding that substitution urethroplasty with its ease of technical performance, reliability and overall high success rates has gained popularity and is increasingly replacing anastomotic urethroplasty in some centres (6,7).

The success in urethral stricture treatment does not

end with early outcome assessment. Mundy found that re-stricturing occurs within weeks or months and at most 2 years 8. The earliest of our patients to re-stricture presented within three weeks after surgery. Manav and Rajeev had a range of 39 to 219 days as the period re-stricturing occurred in their study (9). We noted that the strictures of the membranous urethra failed more than the rest and this is in keeping with other studies' findings that posterior urethral strictures are technically more difficult and end up with higher failure rates (10-12). Barbagli noted that anastomotic urethroplasty failure increases after the 2cm length of stricture (13). Our liberal use of anastomotic urethroplasty all the way to 4 cm could explain our failures and high rates of re-stricturing in this category of patients. The early overall success rate in urethroplasty of 88.4%

is within the internationally noted range of 87% to 92% (13,14). Substitution urethroplasty seems to have a better outcome than anastomotic urethroplasty in our setting but with the small numbers of substitution procedures, the true picture can only become evident with a bigger sample focusing just on these two modes of treatment for urethral strictures.

Conclusion

The urethroplasty success rate in KCMC compares favorably with other tertiary centres in the world. Substitution urethroplasty has the best outcome for stricture surgery. Anastomotic urethroplasty has more complications and the highest re-stricture rate which might be due to a more liberal use of the technique in strictures beyond 2 cm in length.

Table 1: Distribution of urethroplasty techniques by location, etiology and length of urethral stricture.

Variable	Total	Urethroplasty technique			p-value
		Anastomotic No.	Staged No.	Substitution No.	
<i>Cause of stricture:</i>					
Traumatic	59	47	5	7	
BXO	3	0	1	2	
Urethritis	35	14	19	2	
Unknown	8	5	0	3	<0.001
<i>Length of stricture (cm):</i>					
0 – 2.0	53	52	0	1	
2.1 – 4.0	19	14	0	5	
Longer than 4.0	33	0	25	8	<0.001
<i>Site of stricture:</i>					
Fossa navicularis	3	1	0	2	
Penile	29	8	16	5	
Bulbous	57	36	15	6	
Membranous	16	15	0	1	0.243

Table 2: Postoperative complications and stricture site.

Site	Wound infection	Urethro-cutaneous fistula	Scrotal hematoma	Re-stricturing
Fossa navicularis	0	1	0	1
Penile	4	3	1	3
Bulbous	6	1	2	7
Membranous	2	0	1	8

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