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Extended Complications of Urethroplasty

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Abstract
Background:*Urethral reconstruction is one of the oldest problems in reconstructive surgery and represents a significant part of urologists' workload. There are many potential complications of urethroplasty which are directly related to the surgical technique, expertise of the surgeon and other factors. We present our experience in 50 urethroplasties which were reviewed retrospectively to determine all forms of possible complications.*
Materials and methods:*A retrospective study of all patients who had various forms of urethroplasty between December 2005 and December 2011 was done. Details of their presentation, management, outcome and complications were reviewed.*
Results:*50 patients underwent urethroplasty (15 pedicle flap repair, 33 anastomotic and 2 buccal mucosal graft) with mean follow up of 6 months (range 2-36 months). Surgical site infection was the most common complication. Surgical site infection and stricture recurrence were twice as common in those who had penile pedicle flap as those who had anastomotic repair. The age of patients, cause of stricture and location of stricture had no statistically significant effect on complications encountered whereas the length of stricture and degree of peri-urethral fibrosis had statistically significant effects.*
Conclusion:*Complications seem more prevalent with pedicle flap repair than with other methods. We found that infection was the most common complication following urethroplasty and recurrent stricture was more prevalent following pedicle flap repair.*

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I. Introduction

There are many potential complications of urethral reconstructive surgery. Complications of urethroplasty are directly related to the location of the stricture, surgical technique, type of substitution tissue and length of the stricture. The most common complication is stricture recurrence. All surgery is associated with risks, however surgery for urethral stricture can be accomplished in most cases with minimal morbidity and complications. However, when urethroplasty are properly performed, those risks are very low. In general, the risks of not treating a stricture are far greater than the risk of repair. Urethroplasty has excellent success rate against urethral stricture and the success is very dependent on the surgical technique and expertise of the surgeon[1]. However, the incidence of complications following urethroplasty is probably greater than generally reported and therefore warrants further studies[1].

II. Materials And Methods

All patients who had urethroplasty at LAUTECH Teaching Hospital Osogbo between December 2005 and December 2011 were the subjects of this study. Within the study period, a total of 50 patients who had various forms of urethroplasty by the same team of Surgeons comprising of two consultant Urologist were recorded.Information on the preoperative history of patient, investigations, location and length of the stricture based on urethrographic (RUCG) findings and intra-operative findings, type of surgical procedure, donor tissue for substitutionalurethroplasty, urine microbiology, possible etiology of the stricture, outcome of the procedure (as assessed by peak flow rate and residual urine volume) and all forms of early and late complications reported were retrieved from the patients folders. The data were analyzed using SPSS (Statistical Package for Social Sciences) version 17.0. p value less than 0.05 were considered statistically significant.

III. Results

The patients' mean age was 44.2±21.53 years (range 2-75 years). A total of 50 patients had one stage urethroplasty within the study period. Two-third (66%) of the patient presented withurinary retention. Seven patients (14%) had suprapubic cystostomy from peripheral hospital while two patients had urethrocutanous fistula at presentation. About two (64%) patients had bacteriuria at presentation.Majority of the stricture,

29(58%) were secondary to inflammation while 42% were pos-traumatic. Altogether, 88% of the strictures were solely found in the anterior urethra (58% post inflammatory, 30% post traumatic). Majority of the anterior strictures (64%) were located in the bulbar urethra. A larger percentage of cases (58%) were short segment stricture with minimal spongiofibrosis while 42% had long segment stricture with extensive fibrosis. The mean stricture length was 3.91cm(range 1.5-9cm).Two-third (66%) of cases were repaired by resection of stricture segment with end to end anastomosis, 30% had pedicle flap while 4% had buccal mucosa graft. All the posterior urethral stricture (12%) were repaired with end to end anastomosis.The overall complication rate was 26%. One-fifth (20%) had early postoperative complications while 10% had late complications. Majority of the early complications are minor and self-limiting. The most common complication was surgical site infection, reported in 16% of patients. The complication rate was observed to be higher in substitutional urethroplasty than anastomotic urethroplasty. The age of patient, etiology of stricture, location of stricture and type of repair had no statistical significance regarding the complications encountered. However length of stricture and degree of spongiofibrosis were statistically significant. Stricture recurrence was commoner in those that had substitutional urethroplasty than anastomotic.

Table 1; Etiology of stricture

Etiology	Frequency	Percentage (%)
Inflammation	29	58%
Trauma	18	36%
Genitourinary instrumentation	3	3%

Table 2; Location of stricture

Location of stricture	Frequency	Percentage (%)
Penile urethra	6	12%
Bulbar urethra	32	64%
Bulbo-membranous	4	8%
Membranous urethra	2	4%
Penobulbar	6	12%

Table 3; Type of Urethroplasty

Type of repair	Frequency	Percentage
Pedicle flap	15	30%
Anastomotic	33	66%
Buccal mucosa graft	2	4%

Table 4; Post-operative complications

Complication	Frequency	Percentage
Surgical site infection	8	16%
Stricture recurrence	6	12%
Scrotal haematoma/ swelling	6	12%
Urethral diverticulum	1	2%
Tightness with erection	4	8%
Dribbling	4	8%
Penile shortning	1	2%
Penile Skin necrosis	1	2%

Table 5; Oral complications. (Total no of patient =2)

Complication	frequency	percentage
Peri oral numbness	1	50%
Numbness of the feet	1	2%

IV. Discussion

Urethroplasty is regarded as the gold standard treatment for urethral stricture and offers better outcomes in term of recurrence rate than urethral dilatation and urethrotomies[2].Various methods of treating urethral stricture have evolved over time with different success and complication rates, however urethroplasty still remains the gold standard. The success rate, complication rate and type of complication are determined by many factors including length of stricture, location, degree of spongiofibrosis, previous treatment,type of repair and expertise of the surgeon[2].

Most reported outcomes of urethroplasty have traditionally focused only on urodynamic parameters such as flow rate, American Urological Association Symptoms score and recurrence of stricture. There are many complications related to the procedure, donor site and positioning of the patient. As many of these surgeries

require tissue transfer donor site issues must also be considered. In some cases urethroplasty can be done in supine position however much of the surgery also requires lithotomy position, the distribution of complications with regard to the lithotomy position varies with the degree of lithotomy. It is however worthy of note that complications relating to lithotomy position like neurapraxia, compartment syndrome and persistent neurologic injury are less common with the use of modern stirrups[3].In our study only 1 (2%) patient had numbness of the feet which resolved spontaneously within three weeks.

In our study, 38 patient (76%) had a satisfactory outcome in term of urinary flow rate (Peak flow rate >15ml/s in majority of patients), post void residual (<50ml in majority) and symptom score. Various forms of complications were documented and the overall complication rate was 26%. The most common complication was surgical site infection which was reported in 16% of cases in spite of culture specific prophylactic antibiotic. This is probably due to the fact that many of the patients (64%) had bacteriuria at presentation which may be due to delay presentation and previous attempt at treatment from the referral centers. This is similar report of a similar studies from Northern part of Nigeria[4].

The second most common complication was stricture recurrence (12%) which was observed to be commoner with substitutional urethroplasty than anastomotic. Recurrence of stricture has traditionally been attributed to failure or inability to localize the extent of the stricture[5-9] Factors such as poor graft take, poor flap survival and poor technique of primary anastomosis can also contribute to recurrence[5-9] . The rate of recurrence from our study may actually not be a true value because many of the patients were lost to follow up. Mean follow up period was 6 months (2-36 months).

The entity of erectile dysfunction has to be considered in any urethral surgery[10,11] .unfortunately, erectile dysfunction is mentioned in passing most time. None of our patient reported erectile dysfunction, however their erectile function were not assessed pre operatively.

V. Conclusion

Urethroplasty is more art than science, the field keeps growing with different techniques evolving. All surgery carry risk of complication but it can be minimized with prompt treatment and referral to appropriate facility.

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