

# Urethroplasty Practices among Reconstructive Urologists in Nigeria

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## ABSTRACT

**Objectives:** To determine the national practice patterns in the management of male urethral stricture disease by the open urethroplasty technique. **Materials and Methods:** A questionnaire-based national survey of Nigerian urologists was performed during the 19<sup>th</sup> Annual General Meeting and Scientific Conference of the National Association of Urological Surgeons of Nigeria, held at Ibadan, Southwest Nigeria in 2013. **Results:** A total of 55 respondents (67.1%) completed the questionnaire. About 43.6% were between the ages of 40 and 49 years. Almost 41.8% had between 5 and 9 years of experience as a reconstructive urologist, and 50.9% performed 1–9 urethroplasties/year. A total of 80 responders reported trauma as the most common etiology for their strictures. About 63.7% preferred to treat strictures after 3–6 months of diagnosis and 67.3% of respondents preferred the combination of retrograde urethrography and voiding cystourethrography for the diagnosis of urethral stricture. Stenting of the urethra was done after urethroplasty using size 16 Fr of 18 Fr silastic catheter; however, the duration of stenting varied among urologists. About 41.8% followed up their patients for a year, and uroflowmetry was used by 36.6% of the responders to follow-up their patients. Stricture recurrence was the most common reported complication by 36.4% of the respondents. **Conclusions:** In Nigeria, most urethral stricture diseases are treated by open urethroplasties. Very few of these surgeries are performed annually by young urologists. There is no uniformity in the method of diagnosis, stenting, and follow-up after treatment.

**KEYWORDS:** Reconstructive urology, urethral stricture, urethroplasty

## INTRODUCTION

Male urethral stricture disease constitutes a significant proportion of the urologist workload in Nigeria. It is one of the oldest pathologies known in urology.<sup>[1,2]</sup> The dynamics of the disease has continued to change across geographical zones. In the past few decades, the etiology in developing countries like Nigeria was mainly inflammatory and most commonly from gonococcal urethritis.<sup>[3]</sup> More recently, traumatic strictures have become more common.<sup>[4–6]</sup> In the developed clime, iatrogenic strictures predominates.<sup>[7]</sup> The management has also undergone changes, passing from urethral dilatation to minimally invasive procedures like optical urethrotomy and

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then to open urethroplasty which is the preferred procedure with the highest success rate.<sup>[1,8]</sup>

The treatment for male urethral stricture disease can be daunting. The oldest and simplest form is urethral dilatation, which can be performed with a number of different devices and is generally considered a palliative maneuver.<sup>[9]</sup> Direct vision internal urethrotomy (DVIU) was introduced by Sachse,<sup>[10]</sup> to treat urethral stricture using cold-knife incision. In general, open urethral reconstruction is the most successful management option for urethral strictures, but it requires surgical expertise, adequate operating room facilities and has a longer recovery period.<sup>[9]</sup>

Choice of treatment is often affected by the experience of the surgeon, availability of treatment options, and cost. In Nigeria, most urethral stricture diseases are treated by open urethroplasties.<sup>[3–5]</sup> This can be explained by the documented higher success rate of these procedures, rather high failure rate of urethral dilatation and internal urethrotomy,<sup>[8]</sup> and also by lack

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of experience with DVIU in most of our centers. However, the number and types of open urethroplasties performed nationwide are yet to be fully ascertained so far.

The aim of this study was therefore to determine the national practice patterns in the management of male urethral stricture disease by the open urethroplasty technique among reconstructive urologists in Nigeria.

## MATERIALS AND METHODS

A nationwide survey of practicing reconstructive urologists was performed during the 19<sup>th</sup> Annual General Meeting and Scientific Conference of the National Association of Urological Surgeons of Nigeria, held at Ibadan, Southwest Nigeria in 2013 and by electronically mailed questionnaire. The questionnaire was not validated [Appendix 1]. The questions were categorized into three groups: Respondents' demographics, nature of strictures, and method of diagnosis, stent practice patterns, and follow-up protocol. Results were analyzed using Microsoft Excel® 2007 Microsoft Corporation, Washington and results expressed in simple proportions and percentages.

## RESULTS

A total of 55 of 82 questionnaires were completed and returned, giving a response rate of about 67.1%. In most of the respondents (urologists), 24 (43.6%) were between the ages of 40 and 49 years [Table 1]. The practice pattern showed that 45.5% were in the employ of the Federal Teaching Hospitals, 49.1% were employed in the State Teaching/General Hospitals, and 5.5% were in Private Practice. In most of the respondents, 23 (41.8%) had between 5 and 9 years of experience as a reconstructive urologist.

The estimated numbers of urethroplasties performed per year are shown in Table 1. Traumatic strictures accounted for the most common cause of strictures treated by respondents in 44 of 55 respondents (80.0%). In most of the respondents, 35 (63.7%) preferred to treat strictures after 3–6 months of diagnosis, 5 out of 55 respondents (9.2%) treated strictures between 0 and 2 months, 7 (12.7%) operated after 7–9 months after diagnosis, and 8 (14.5%) operated after 10–12 months of diagnosis. Thirty-seven of 55 (67.3%) respondents preferred the combination of retrograde urethrography (RUG) and voiding cystourethrography (VCUG) for the diagnosis of urethral stricture, while 18 of 55 (32.7%) used only RUG.

The choice of stent size after urethroplasties varied among urologists. Twenty-seven of 55 respondents (49.1%) preferred size 16 F silastic catheter while 28 of 55 respondents (50.9%) used size 18 F silastic catheter. The duration of stenting also varied among urologists. Thirty-one of 55 respondents (56.4%) preferred a 4 weeks stay, and 21 of 55 respondents (38.2%) left the stents for 3 weeks. Three of 55 respondents (5.5%) left the stents for up to 5 weeks. The only investigative tool before removal of the stent was a peri-catheter urethrogram performed

by 52 of 55 respondents (94.5%). Of 55 respondents, 23 (41.8%) followed up their patients for a year while 20 (36.4%) expect to follow-up their patient for life. The most commonly used tool by the respondents to follow-up their patients after urethroplasty was uroflowmeter (36.6%) and International Prostate Symptom Score (30.9%). The most common complication after open urethral repair was recurrence of the stricture as reported by 36.4% of the responders followed by fistula formation in 23.6% of the responders [Table 2].

**Table 1: Respondents categorized by age, years of experience and number of urethroplasties performed in last year**

Variables	Number of urologists (%)
Age (years)	
30-39	16 (29.1)
40-49	24 (43.6)
50-59	11 (20.0)
60-69	4 (7.3)
Years of experience (years)	
0-4	13 (23.7)
5-9	23 (41.8)
10-14	15 (27.3)
>15	4 (7.2)
Number of urethroplasties performed annually	
1-9	28 (50.9)
10-19	18 (32.7)
20-29	7 (12.8)
>30	2 (3.6)
Common type of stricture treated	
Traumatic	44 (80.0)
Inflammatory	11 (20.0)
Iatrogenic	0 (0)
Expected follow-up period	
Life	
1-year	20 (36.4)
2 years	23 (41.8)
3 years	5 (9.1)
4 years	3 (5.5)
5 years	4 (7.3)
Tools for follow-up	
IPSS*	17 (30.9)
Uroflowmetry	20 (36.4)
RUG**	4 (7.3)
History of LUTS***	2 (3.6)

\*IPSS: International Prostate Symptom Score, \*\*RUG: Retrograde urethrography, \*\*\*LUTS: Lower urinary tract symptom

**Table 2: Common complications following urethroplasty**

Complication	Number of respondents (%)
Urethritis	3 (5.5)
Recurrence	20 (36.4)
Fistula	13 (23.6)
Wound infection	11 (20.0)
Erectile dysfunction	10 (18.2)
Penile/scrotal edema	1 (1.8)

## DISCUSSION

In some developed countries, the common practice in the treatment of anterior urethral stricture is to proceed to reconstructive surgery, only after a failed minimally invasive procedure.<sup>[11]</sup> However, in Nigeria, and in some developing countries, apart from urethral dilatation, open urethral reconstruction remains the most common mode of treatment for anterior urethral stricture.<sup>[4,5]</sup> Open urethral reconstruction is the most successful management option for urethral stricture.<sup>[9]</sup>

Most of the urologists in this Nigerian survey were within the age of 40–49 years (43.6%) and almost half of the responders (49.9%) were under the employ of state-owned hospitals. Compared with similar surveys of urologists in Italy and America,<sup>[2,11]</sup> the Nigerian urologists were a decade younger. The majority (41.8%) had 5–9 years of experience as a reconstructive surgeon. For the purposes of this review, years of experience imply number of years postqualification as a urologist and does not signify experience with the practice of reconstructive urology or any additional training in the field. Similarly, half of the responders (50%) perform between one and nine urethroplasties annually. Overall, this relatively small numbers performed annually could hinder adequate skills acquisition and also raises the ethical issues of allowing such surgeons to perform such surgeries on patients without the requisite experience. It can be argued that for better results, such surgeries should be performed in specialized centers staffed with surgeons with necessary skills and experiences while not compromising the need to train younger urologists.

An understanding of the underlying etiology of a stricture plays a significant role in making a choice for repair. Whereas inflammatory strictures once accounted for the majority of urethral strictures in our environment, traumatic strictures from fall astride injuries, road traffic crash, and penetrating injuries to the urethra now account for most strictures in our environment.<sup>[4]</sup> Most strictures treated by our responders were caused by trauma (80%). These strictures in most cases are expected to be single, short segment strictures, and easily amenable to single stage repairs either by excision and primary anastomosis or with graft repair.

Urethrography remains the gold standard for the diagnosis of urethral stricture although methods of evaluation vary from published data.<sup>[12]</sup> Sixty-seven percent of our responders preferred the combination of RUG and VCUG for the diagnosis of stricture, none of our responders used urethroscopy or sonourethrography for the diagnosis of stricture. In contrast to the Italian and Dutch national surveys, 16% of Italian urologists<sup>[11]</sup> and 72% of Dutch urologist<sup>[13]</sup> reported that urethrography as their diagnostic tool of choice. The reasons adduced for the low use of radiography by the Italian urologist was that they considered urethrography invasive and not well

accepted by Italian patients. As a combined modality, RUG and VCUG offer a means for the diagnosis of urethral stricture especially if the stricture is complete, with a sensitivity of between 75% and 100%.<sup>[14]</sup> It also provides additional information on concurrent pathology in the urethra such as fistula, false passage, and significant ductal reflux.

All the urologists surveyed in this study used stents after open urethroplasties. However, there was no consensus on the size of stent to be used. Both size 16 Fr and 18 Fr silastic catheters were used by the responders in almost equal proportions; however, the duration of stenting varied significantly among Nigerian urologists. The majority (56%) of our responders retained the stents for 4 weeks before removal. Urethral healing is expected to occur after 21 days; however, stenting can be extended for up to 28 days if there was leakage of contrast at the site of reconstruction after 21 days as demonstrated on a peri-catheter urethrogram.<sup>[15]</sup>

There are no standardized protocols for follow-up of patients after urethroplasty. Patients should ideally be follow-up for life because of the risk of re-stricturing. Forty-two percentage of our responders would expect to follow-up their patients for only 1-year while 36% expected to follow-up their patients for life. This lack of uniformity in follow-up protocol means that it would be difficult to exactly define the success rate of the procedure as well as re-structure rate for any particular procedure. The most commonly used tool in the literature for the follow-up of patients after urethroplasty is uroflowmetry.<sup>[16]</sup> It has the advantage of being noninvasive and easy to conduct. However, only 36% of our responders use uroflowmetry after urethroplasty. The reason for this low usage may be due to nonavailability of this method of assessment in our environment. Anatomic assessment of the repair site either with urethrography or direct visualization provides the most accurate information with regards to success and the presence of recurrent stricture.<sup>[16]</sup>

The most common complication after open urethroplasty from this survey was recurrence of the stricture. Thirty-six percentage of our responders experience recurrence as the most common complication after various procedures. This invariably implies a need for re-intervention. Other noted complications include fistula formation, erectile dysfunction, and wound infection. It has been recommended that in order to improve outcome, surgeons should regularly audit their practice and make necessary adjustments.<sup>[5]</sup> Similarly, to optimize the management of urethral stricture disease, familiarity with indications and state-of-the-art performance of the procedures seem to be of paramount importance.<sup>[11]</sup>

Analysis of this survey revealed a number of limitations. Firstly, the study is based on a questionnaire with a response rate of 67%. The sample size (55) surveyed is quite small compared to the total number of urologists in the country. It would be difficult making a generalized conclusion from this sample size. The finding of this study may therefore be overestimated. The questionnaire

also failed to reveal the skills that the responders acquired during training or any additional training in reconstructive urology. The implication of this is that the responders with similar skills and experience in reconstructive urology cannot be compared. Secondly, it would be difficult to ascertain the mean length of the strictures treated by our responded as well as the type of repair which was most commonly practiced.

However, it is expected that this study will act as a framework for further study on national practice patterns among urologists in Nigeria. There may also be a need for standardization of the practice of urethroplasty and the setting up of specialized centers with skilled and well-experienced staff.

## CONCLUSIONS

In Nigeria, most urethral stricture diseases are treated by open urethroplasties. Very few of these surgeries are performed annually by young urologists. This significantly impacts on the outcome of the procedures. A combination of RUG and VCUG is the preferred method for the diagnosis of anterior urethral stricture disease. There are no standardized protocols for follow-up of patients after urethroplasty. To improve outcome, familiarity with state-of-the-art performance of the procedures seem to be of paramount importance. We recommend further studies to garner more information on the numbers and type of procedures performed nationwide which will serve as a baseline for determining practice patterns and planning strategies in the management of urethral stricture disease.

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## Conflicts of interest

There are no conflicts of interest.

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## APPENDIX 1

1. Age
  - (a) 30–39 years
  - (b) 40–49 years
  - (c) 50–59 years
  - (d) 60–69 years
  - (e) 70–79 years
  - (f) >80 years
2. Institution of practice.
  - (a) Federal Teaching Hospital
  - (b) State Teaching Hospital
  - (c) General Hospital
  - (d) Private hospital
  - (e) Others
3. Years of experience as a reconstructive urologist
  - (a) 0–4 years
  - (b) 5–9 years
  - (c) 10–14 years
  - (d) 15–19 years
  - (e) >20 years
4. Estimated number of urethroplasties performed per year
  - (a) 1–9
  - (b) 10–19
  - (c) 20–29
  - (d) >30
5. What is the most common stricture type in your practice?
  - (a) Traumatic
  - (b) Inflammatory
  - (c) Iatrogenic
  - (d) Others
6. If the cause of the stricture is traumatic, what is your preferred interval between diagnosis of stricture and time for urethroplasty
  - (a) 0–2 months
  - (b) 3–6 months
  - (c) 7–9 months
  - (d) 10–12 months
7. What is the single most important investigation for your stricture cases?
  - (a) Uroflowmetry
  - (b) RUG

- (c) MCUG
- (d) Combination of RUG/MCUG
- (e) Urethroscopy
- (f) Ultrasonography

## CATHETER/STENT PRACTICE PATTERN

8. What is your best choice of catheter/stent size following urethroplasty?
  - (a) 12 F
  - (b) 14 F
  - (c) 16 F
  - (d) 18 F
  - (e) 20 F
  - (f) 22 F
9. How long do you leave the urethral catheter/stent in place after urethroplasty?
  - (a) 1-week
  - (b) 2 weeks
  - (c) 3 weeks
  - (d) 4 weeks
  - (e) 5 weeks
10. Do you routinely require any investigation before removal of catheter/stent
  - (a) Yes
  - (b) No
11. If the answer to question 10 is yes, what procedure do you commonly employ before/during removal of stent?
  - (a) Pericatheter urethrogram
  - (b) Pullout urethrogram
  - (c) RUG
  - (d) MCUG

## FOLLOW-UP PROTOCOL

12. What is the length of time you expect to follow-up your patient after urethroplasty?
13. How frequently do you follow-up patients after urethroplasty?
14. What investigative tool do you employ during follow-up of patients?
  - (a) Uroflowmetry
  - (b) RUG
  - (c) IPSS
  - (d) None
  - (e) Others
15. In your practice, what are the common complications after urethroplasty?