

Adult urethral stricture: Practice and expertise of urologists in Saudi Arabia

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Abstract

Objective: The aim of this study is to determine the methods used to evaluate and manage urethral strictures by urologists practicing in Saudi Arabia.

Materials and Methods: This is a cross-sectional study based on a validated questionnaire directed to all urologists and senior residents practicing in Saudi Arabia. Categorical data reported as frequencies and percentages. A Chi-square test was used for inferential analysis. $P < 0.05$ was considered statistically significant.

Results: We received 112 responses, of which 78% were from board-certified urologists. The majority were working in government hospitals. The rate of endoscopic procedures performed exceeded open urethroplasty. Direct Vision Internal Urethrotomy was the most common procedure performed as stated by 85% of the responses. Uroflowmetry with postvoid residual was the most common investigation requested to assess strictures before and after the operation usually in adjunction with retrograde urethrogram and or cystoscopy. Most of the urologists believed in a step-wise approach in the management of strictures and that urethroplasty is indicated only after repeated trials of endoscopic management.

Conclusion: Our results revealed a preference, and perhaps misuse, of endoscopy which might raise a concern regarding patients' prognosis with repeated endoscopic management. Most of the urologists seem to be reluctant to proceed to a definitive treatment on the time of diagnosis either due to a lack of experience or knowledge. The results showed no difference between practice in government and private hospitals.

Keywords: Saudi Arabia, urethral stricture, urethroplasty, urethrotomy

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INTRODUCTION

Narrowing in the urethral lumen resulting from fibrosis of the spongy subepithelial tissue is known as a urethral stricture.^[1] Even though urethral strictures have been well-known since historic times, its management continues to pose a challenge.^[2] Surgical options range from a minimally invasive intervention

to a much more technically demanding but definitive surgery.

Endoscopic management such as urethrotomy and dilatation are easy, accessible, and can be performed multiple times for the same patient; however, on the long term, up to 40% will fail and strictures will recur.^[1,3]

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Urethroplasty can be effective in up to 90% of primary strictures, but its success rate decreases in cases previously treated through endoscopic management.^[1,4] In spite of overwhelming evidence that supports open urethroplasty as a more cost-effective solution, endoscopic procedures are primarily used even in patients considered as poor candidates with expected high failure rates.^[5-8]

Locally, experts suggest that there is a lack of experience in urethral reconstruction and misuse of endoscopic procedures in managing strictures. A single study has evaluated the management approach and opinions of urologists in Saudi Arabia. Results showed a predominance of performing endoscopic procedures to strictures even after a second recurrence. In addition, more than half the urologists denied performing urethroplasty.^[9] Our aim was to determine the trend in the pre- and postoperative evaluation and stricture management by urologists practicing in government and private hospitals in Saudi Arabia.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted during the period February–June 2018 using a 23-item questionnaire [Appendix 1], which was created by combining questions from four reports in the literature.^[3,4,7,8] Before distribution, the questionnaire was validated through a focus group validation. It was distributed to all practicing urologists and all senior residents (namely, 4th- and 5th-year residents) in Saudi Arabia. A consent form was included, and responses were submitted anonymously. Data were entered and coded in an Excel spreadsheet and then incorporated into and analyzed using SAS version 9.4 (SAS institute, Cary, North Carolina, United States). Categorical variables were reported as frequencies and percentages. The Chi-square test was used for inferential statistics. Statistical significance was recognized when $P < 0.05$.

RESULTS

Of 363 questionnaires distributed, 112 responses were received (30.8% response rate). Details of the responses are shown in Tables 1-4 and Figures 1-3. About 78% of the responses were from attending physicians and 21% were from senior residents. Among the former, 55% practiced in government hospitals, 16% in private hospitals, and 27% in both. Over the past year, most (68%) treated no more than 10 patients for stricture [Table 2]. Half of the respondents performed no open urethroplasties in the past year, 31% performed at least one and 13% performed >5 [Table 2]. The rate of urethroplasty in private hospitals was statistically the same as that in government hospitals. Endoscopic procedures were by far

Table 1: Respondent characteristics

Characteristics	n (%)
Age	
<30	13 (11.71)
30-39	37 (33.33)
40-49	37 (33.33)
50-59	19 (17.12)
60-69	5 (4.50)
Not reported	1
Position	
Consultant	69 (62.16)
Specialist	18 (16.22)
R5	5 (4.50)
R4	19 (17.12)
Not reported	1
Type of practice	
Government	96 (85.71)
Private	38 (33.93)
Academic	18 (16.07)
Location	
Central	55 (49.11)
Eastern	23 (20.54)
Western	24 (21.43)
Northern	2 (1.79)
Southern	8 (7.14)
Setting	
Urban	104 (96.30)
Rural	4 (3.70)
Not reported	4
Field of interest	
Endourology	60 (53.57)
Andrology	26 (23.21)
General urology	49 (43.75)
Reconstructive surgery	24 (21.43)
Oncology	28 (25.00)
Pediatric urology	20 (17.86)
Other	10 (8.93)
Treating	
Adult patients only	76 (68.47)
Pediatric patients only	8 (7.21)
Pediatric urologist treating adult stricture disease	3 (2.70)
Adults and pediatric patients	24 (21.62)
Years of experience (years)	
1-3	9 (8.04)
4-6	17 (15.18)
7-9	16 (14.29)
≥10	70 (62.50)

more common than urethroplasty. Direct vision internal urethrotomy (DVIU) was the most common procedure performed (85% of respondents) followed by urethral dilatation (67%). Excision and primary anastomosis (EPA) was the most frequent urethroplasty performed (33%) followed by dorsal buccal mucosa graft (BMG; 20%) and ventral BMG [15%; Figure 1]. Contrary to expectations, private hospitals were comparable to government hospitals in their rates of endoscopy (86% and 94%, respectively) and open urethroplasty (43% and 44%, respectively). Uroflowmetry and postvoid residual volume (UFM/PVR) was used by the majority (84%) for preoperative evaluation followed by Retrograde urethrogram (RUG; 78%) and cystoscopy [64%; Figure 2]. To evaluate the urethral patency after surgery, UFM/PVR was used by 83% of the

Table 2: Responses to questions 9, 16, 17

	n (%)
Number of urethral strictures treated last year	
0	3 (2.70)
1-5	36 (32.43)
6-10	36 (32.43)
11-20	17 (15.32)
≥20	19 (17.12)
Not reported	1
Number of open urethroplasties performed last year	
Refer/don't perform open urethroplasty	55 (49.55)
0	8 (7.21)
1-5	34 (30.63)
6-10	3 (2.70)
11-20	5 (4.50)
≥20	6 (5.41)
Not reported	1
Last open urethroplasty performed	
Refer/don't perform open urethroplasty	55 (49.55)
Last month	21 (18.92)
Within a year	27 (24.32)
A few years ago	6 (5.41)
I don't remember	2 (1.80)
Not reported	1

Table 3: Responses to questions 11, 12, and 13

	n (%)
Maximal stricture length to perform DVIU (cm)	
<1	34 (30.36)
<1.5	32 (28.57)
<2	37 (33.04)
<2.5	3 (2.68)
<3	3 (2.68)
>3	3 (2.68)
Do you manipulate a ureteral guiding catheter/guidewire through the stricture prior to DVIU?	
No	2 (1.79)
Yes	99 (88.39)
Sometimes	11 (9.82)
How long do you leave a Foley catheter in place after a DVIU?	
24 h	17 (15.18)
<1 week	68 (60.71)
1 week	20 (17.86)
>1 week	7 (6.25)

DVIU: Direct visual internal urethrotomy

respondents, RUG by 36%, international prostate symptom score by 20%, and cystoscopy by 19% [Figure 2].

Over half of the respondents (57%) managed urethral stricture disease via a reconstructive surgical ladder. Among senior residents, 70% believed that starting with endoscopy is a mainstay in managing strictures, whereas among attending physicians, 53% believed this. Surprisingly, urologists who treated >10 patients and had more experience with strictures also believed more in the step-wise approach. Compared to those practicing in government hospitals, those practicing in private hospitals were more likely to follow the surgical ladder approach (69% vs. 54%); however, it was not statistically significant. Surgeons who practiced in government hospitals

were more likely to direct patients to definitive surgery after failure of the first attempt at endoscopic management. Yet many who practiced in government hospitals (42%) and most who practiced in private hospitals (69%) believed that urethroplasty is indicated after the second failure of endoscopic management.

A great majority of participants (95%) believed that stricture length and location were primary reasons for opting to perform open urethroplasty [Table 4]. A lack of experience with open urethroplasty was the primary reason for a low rate of performing this procedure as stated by 75% [Table 4]. Other reasons were patient preference, lack of interest in urethroplasty by the surgeon, a reasonable success rate and comparatively low morbidity with endoscopy, revenue pursuits of the surgeon, and a lack of training, given that the specialized training required for urethroplasty is absent from urology training programs. Urologists practicing in private hospitals were considerably more likely to believe that urethroplasty is a difficult procedure (46% vs. 26%).

Finally, participants were asked how they would manage each of two scenarios: a 3.5-cm primary stricture and a 1-cm recurrent stricture with two failed attempts at endoscopic management. In the former, 73 (66%) would refer the case to a reconstructive urologist. Of the 37 who chose not to refer, 15 (41%) would perform a dorsal BMG [Figure 3]. In the latter, respondents predominantly chose to refer to a reconstructive urologist. Of the 51 remaining respondents, 34 (67%) chose EPA [Figure 3]. Differences between private and government practices were not found. Likewise, differences between nonreconstructive and reconstructive urologists were not found when rates of referral were ignored.

DISCUSSION

These results indicate that UFM, RUG, and cystoscopy are the most commonly used preoperative investigations used to plan stricture management. These are also the most common investigations performed in the Netherlands, Italy, and Turkey. In particular, UFM is performed by more than half the urologists in these countries.^[3,7,8] On the other hand, RUG is preferred by 78% of our respondents compared to only 16% of Italian urologists. This is attributed to the invasive nature of RUG.^[7] Among urologists in the Netherlands, Italy, and our sample, UFM remained the preferred method for evaluating urethral patency after surgery.^[3,7] However, the preference for RUG and cystourethroscopy dropped from 78% and 64% to 36% and 19%, respectively. Likewise, Dutch and Italian urologists opted for less invasive methods

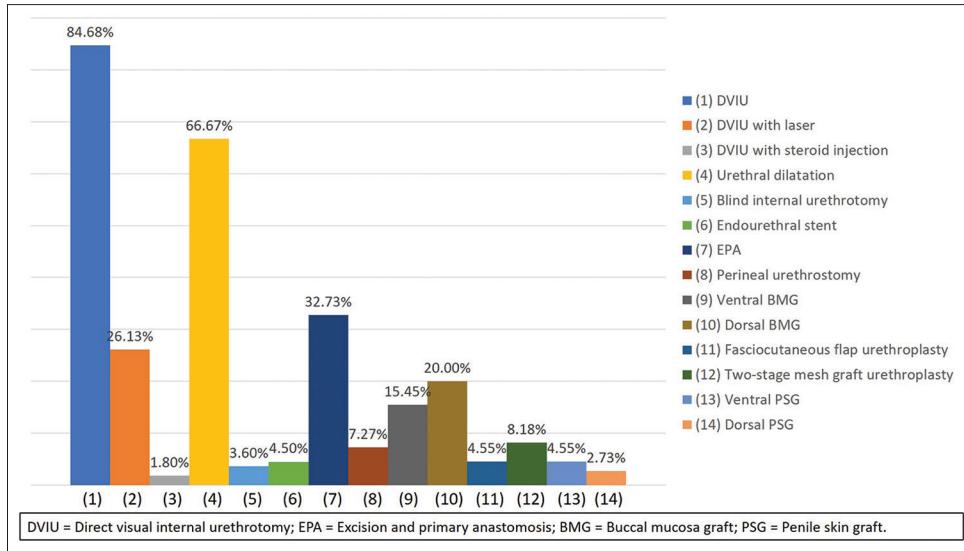


Figure 1: Procedures performed last year

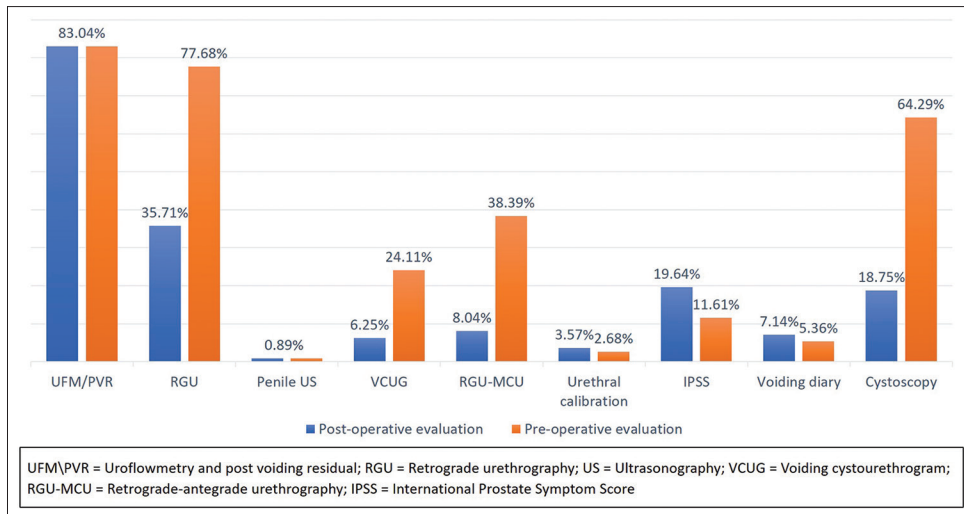


Figure 2: Methods used to evaluate urethral strictures before surgery and lumen patency after surgery

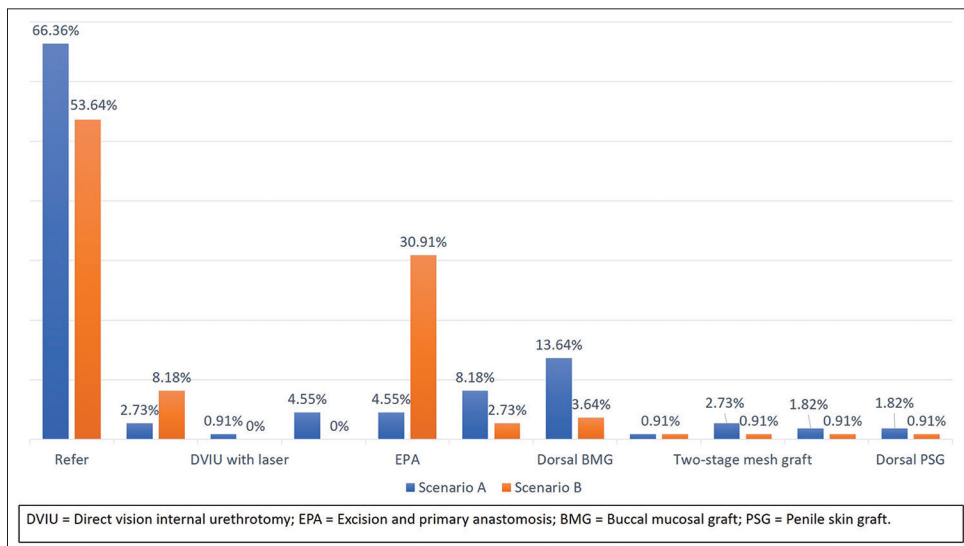


Figure 3: Answers to Q23 A and B

Table 4: Answers to Q15, 19, 20, and 22

	n (%)
When to perform/direct a patient to open urethroplasty?	
On the 1 st diagnosis of a stricture	1 (0.01)
After the 1 st failure of urethrotomy/dilatation	39 (35.77)
After the 2 nd failure of urethrotomy/dilatation	50 (45.87)
After the 3 rd failure of urethrotomy/dilatation	12 (11.01)
Never	7 (6.42)
Not reported	3
After urethroplasty surgery, when to obtain a VCUG or RUG?	
Refer/don't perform open urethroplasty	55 (50.00)
2 weeks	11 (10.00)
3 weeks	15 (13.64)
4 weeks	20 (18.18)
Other	9 (8.18)
Not reported	2
How to specify the indication of open urethroplasty?	
Age of patient	51 (45.95)
Length and localization of the stricture	105 (94.59)
Number of previous urethral stricture operation	86 (77.48)
Failure of other techniques	68 (61.26)
Not reported	1
Why isn't open urethroplasty commonly performed?	
Open urethroplasty is a hard procedure	45 (41.28)
The specialists lack experience	82 (75.23)
Endoscopic surgery is more applicable	31 (28.44)
The open urethroplasty success rate is low	9 (8.26)
Other	9 (8.26)
Not reported	3

VCUG: Voiding cystourethrogram, RUG: Retrograde urethrogram

postoperatively.^[3,7] According to the current guidelines, a postoperative evaluation for stricture recurrence must be carried out; however, recommendations for the diagnostic methods are not given, indicating that follow-up plans must be individualized.^[10] It is reasonable that patients with high risks for recurrence (for example, those with prior management with endoscopy, a long stricture, or a penile stricture)^[11,12] be evaluated using invasive modalities that are highly sensitive and specific (for example, urethrocystoscopy or RUG).

Endoscopic management was by far more frequently performed on urethral strictures in our sample, and this agrees with observations in the US, the Netherlands, Italy, and Turkey. In our sample, DVIU was performed by 85% of the urologists, matching the rates in the other countries ($\geq 80\%$). The most common urethroplastic procedures performed were EPAs and dorsal and ventral BMGs, and this is similar to findings in other countries.^[3,4,7,8] In the Netherlands, nearly half of the urologists stated they do not obtain images; however, only two of our respondents stated this.^[3] Among our respondents, 59% stated they would use endoscopy to treat strictures as long as 2 cm, but in Italy, 72% used 1.5 cm as the cutoff.^[7] In the Netherlands, however, nearly half the urologists would perform endoscopic procedures on strictures as long as 3 cm.^[3] The management of urethral strictures is largely

believed by urologist in the US, the Netherlands, and Italy to follow a reconstructive surgical ladder, and urethroplasty is considered a last resort.^[3,4,7] Our findings were the same: 57% believed this.

When presented with a 3.5-cm stricture, of those who would treat rather than refer the patient to a reconstructive surgeon, 41% of our sample would perform a dorsal BMG. This differs from urologists in other countries. Some form of endoscopy would be performed by 33% of the urologists in the US, 49% of those in the Netherlands, and 53% of those in Italy.^[3,4,7] If a patient had a short stricture with repeated failed attempts at endoscopic management, 67% of our sample chose to perform an EPA, and 12% would continue management through urethrotomy. In Italy, US, and the Netherlands, EPA was also chosen by 43%, 38%, and 25% of the urologists, respectively. A considerable percentage ($>20\%$) of urologists in these countries would continue management using an endoscopic procedure.^[3,4,7] This raises concern because the literature provides ample evidence that with each endoscopic intervention, the success rate drops significantly, reaching 0% after the third attempt.^[1]

CONCLUSION

These results demonstrate an evident predilection for endoscopic procedures when managing urethral strictures either because it is an effortless application or lack of knowledge. Evaluating and managing strictures in Saudi Arabia is quite similar to that reported in other countries. Moreover, while many claim that practices differ between government and private sectors, our results show that, within the limits of our sample size, variations are not significant.

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Conflicts of interest

There are no conflicts of interest.

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