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Urethroscopic Findings following Urethroplasty Predict the Need for Secondary Intervention in the Long Term: A Multi-Institutional Study from Trauma and Urologic Reconstructive Network of Surgeons

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Urethroscopic Findings following Urethroplasty Predict the Need for Secondary Intervention in the Long Term: A Multi-Institutional Study from Trauma and Urologic Reconstructive Network of Surgeons

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Study Need and Importance: We evaluated early-surveillance urethroscopy and long-term outcomes among urethroplasty patients to determine the value of urethroscopy to predict failure.

What We Found: A multi-institutional cohort of 304 urethroplasty patients with >4 years followup underwent urethroscopy at 3–6 months postoperatively. Patients were categorized into groups based on urethroscopic findings: 1) normal lumen, 2) large-caliber stricture (≥17Fr stricture) and 3) small-caliber stricture (<17Fr stricture). We defined surgical failure as stricture recurrence requiring re-intervention.

The Kaplan–Meier graph shows the post-anterior urethroplasty cumulative probability of recurrence-free survival according to postoperative urethroscopic group (see figure). Compared to the normal group, the hazard ratio of recurrence was 6.7 (95% CI 4.0–11.1, p <0.001) in the <17Fr lumen group and 1.4 (95% CI 0.7–2.9, p=0.32) in the ≥17Fr group.

Limitations: In the study, 23.7% of patients required re-intervention. Our cohort may overestimate the failure rate as these individuals are more likely to seek care and therefore more likely to have a more robust followup to be included in our study.

Interpretation for Patient Care: We show that surveillance urethroscopy can help predict who will be at higher risk of requiring reoperation after urethroplasty. Not all urethroplasty patients have the same risk. Figuring out who will benefit from selective use of postoperative urethroscopic surveillance based on factors such as surgery type will allow for a patient-centric approach that contains cost. Our next steps are to continue to define who benefits from getting scoped and when.

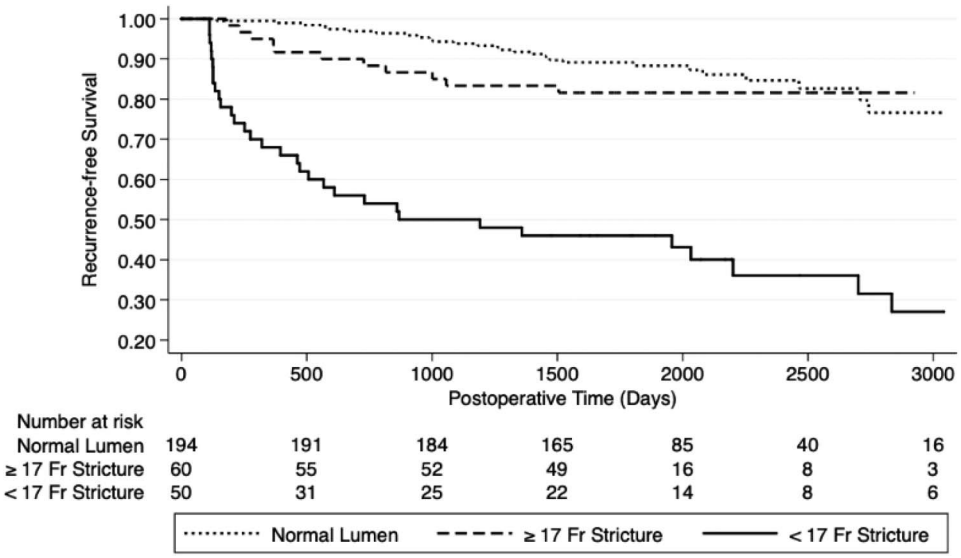

Figure. Cumulative probability of recurrence-free survival after anterior urethroplasty (log-rank test for equality of survivor functions, p <0.001).

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Urethroscopic Findings following Urethroplasty Predict the Need for Secondary Intervention in the Long Term: A Multi-Institutional Study from Trauma and Urologic Reconstructive Network of Surgeons

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Abbreviations and Acronyms

DVIU = direct vision internal urethrotomy

EPA = excision and primary anastomosis

IPSS = International Prostate Symptom Score

MSHQ = Male Sexual Health Questionnaire

PROM = patient-reported outcome measure

SHIM = Sexual Health Inventory for Men

TURNS = Trauma and Urologic Reconstructive Network of Surgeons

Purpose: Postoperative surveillance urethroscopy has been shown to be an effective tool to predict reoperation within 1 year after urethroplasty. We aimed to evaluate early surveillance urethroscopy findings and long-term outcomes among urethroplasty patients in order to define the value of surveillance urethroscopy to predict failure.

Materials and Methods: We evaluated 304 patients with at least 4 years of followup after urethroplasty performed at 10 institutions across the United States and Canada. All patients were surveilled using a flexible 17Fr cystoscope and were categorized into 3 groups: 1) normal lumen, 2) large-caliber stricture (≥17Fr) defined as the ability of the cystoscope to easily pass the narrowing and 3) small-caliber stricture (<17Fr) that the cystoscope could not be passed. Failure was stricture recurrence requiring a secondary intervention.

Results: The median followup time was 64.4 months (range 55.3–80.6) and the time to initial surveillance urethroscopy was 3.7 months (range 3.1–4.8) following urethroplasty. Secondary interventions were performed in 29 of 194 (15%) with normal lumens, 11 of 60 (18.3%) with ≥17Fr strictures and 32 of 50 (64%) with <17Fr strictures ($p < 0.001$). The 1-, 3- and 9-year cumulative probability of intervention was 0.01, 0.06 and 0.23 for normal, 0.05, 0.17 and 0.18 for

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≥17Fr, and 0.32, 0.50 and 0.73 for <17Fr lumen groups, respectively. Patient-reported outcome measures performed poorly to differentiate the 3 groups.

Conclusions: Early cystoscopic visualization of scar recurrence that narrows the lumen to <17Fr following urethroplasty is a significant long-term predictor for patients who will eventually undergo a secondary intervention.

Key Words: urethral stricture, urethra, recurrence, cystoscopy, reconstructive surgical procedures

URETHROPLASTY is the gold standard for the treatment of urethral stricture disease. It achieves higher success rates when compared to endoscopic techniques and is cost-effective.[1] Successful treatment of urethral stricture disease is a combination of maintaining lumen patency and subjective patient satisfaction. However, the exact definition of "success" after urethroplasty is still a point of controversy.[2,3]

Prior efforts have sought to understand and delineate specific protocols for surveillance following urethroplasty, aiming to identify with the greatest sensitivity and specificity who is at risk for failure and thus warrants aggressive followup. Patient surveillance methods include uroflowmetry, retrograde urethrogram/voiding cystourethrogram, urethral ultrasound, visual inspection with urethroscopy, as well as patient-reported outcome measures (PROMs).[4–8] There is no consensus on the optimal surveillance protocol following urethroplasty given the lack of understanding for what truly constitutes a "failure."[9–12] Prior studies evaluated the usefulness of uroflowmetry and postvoid residual data but had demonstrated inherent issues with test administration, poor sensitivity and limited reproducibility.[13,14] In addition, a survey of the literature found significant practice and cost variability for surveillance after urethroplasty indicating that there is no 1 preferred method.[8]

The clinical utility of followup cystoscopy might be questionable since anatomical recurrence of the stricture does not necessarily correlate with patient's symptoms or uroflowmetry data. Baradaran et al demonstrated that, following urethroplasty, a urethral lumen which is unable to accommodate a 17Fr flexible cystoscope is significantly more likely to require a secondary procedure. While the study had a short followup of about 1 year, the data suggested that urethroscopy may be an effective tool for risk stratification and surveillance after urethroplasty.[2]

In this study, we sought to build upon the findings on this prior work by using findings at the time of surveillance urethroscopy to examine longer-term outcomes following urethroplasty in a cohort of patients with at least 4 years of followup. This can inform patient counseling and identify a vulnerable patient group that will require additional intervention for urologists to provide more rigorous followup and care. Herein, we introduce the results from a multicenter prospectively maintained study across the United States and Canada of academic reconstructive urologists. We hypothesized that if the post-urethroplasty urethral caliber was ≥17Fr (the diameter of a flexible cystoscope), as compared to urethral caliber <17Fr, there would be less risk for needing a secondary intervention at 4-year followup.

METHODS

Study Design

We queried the prospectively managed Trauma and Urologic Reconstructive Network of Surgeons (TURNS, http://www.turnsresearch.org) database to obtain cases who underwent urethroplasty. The study was deemed exempt by the University of California San Francisco Institutional Review Board. Of 2,625 cases, 1,663 had initial postoperative surveillance urethroscopy. A total of 357 patients with history of fistula repair, hypospadias repair, meatal pathology and perineal urethrostomy were excluded. Ultimately, a cohort of 304 cases who had followup with any medical provider (primary care provider or urologist) for more than 4 years following surgery were found eligible to enroll in this study. The study population underwent surgery from December 2006 to April 2016 at 10 institutions in the TURNS network. Postoperative surveillance cystoscopic evaluations were performed using a standard flexible 17Fr cystoscope up to the level of the stricture at least 3 months after the surgery, regardless of the patient's symptoms. Patients were categorized into 3 groups based on their initial postoperative urethroscopy results as following: 1) normal lumen without any evidence of stricture recurrence, 2) large-caliber stricture (≥17Fr stricture), defined as the ability of the cystoscope to easily pass the stricture and 3) small-caliber stricture (<17Fr stricture) that the cystoscope could not be passed easily.

Study Outcomes

The primary outcome was defined as stricture recurrence after urethroplasty requiring reintervention. Type of treatments for recurrent cases included clean intermittent catheterization, direct vision internal urethrotomy (DVIU), urethral dilation and revision urethroplasty. The secondary outcome was PROMs. These consisted of the Core Lower Urinary Tract Symptom Score, International Prostate Symptom Score (IPSS), Male Sexual Health Questionnaire (MSHQ) and Sexual Health Inventory for Men (SHIM). PROMs at 3 different stages of followup were reported, consisting of the most recent preoperative, first postoperative and most recent postoperative (limited to those after 8 months postoperative) questionnaires. In failure cases, the most recent PROM before recurrence was reported.

Data Analysis

Patient characteristics and PROMs were reported using descriptive statistics. We used t-test, 1-way ANOVA,

Fisher's exact, Pearson's chi-squared and Kruskal–Wallis tests to compare characteristics of the study groups. Nonparametric tests were used to analyze non-normally distributed data. We also performed a sensitivity analysis to compare the demographics and characteristics of the study cohort with the excluded cases. We reported the positive and negative predictive values of having a <17Fr or ≥17Fr stricture at surveillance cystoscopy that a reintervention is required. PROMs were compared using Kruskal–Wallis test. Kaplan-Meier survival curves were fitted to calculate the cumulative probability of intervention using time to last followup or recurrence as the time variable and recurrence status as the event indicator. We compared recurrence-free survival of the groups using log-rank test for equality of survivor functions. Unadjusted and adjusted hazard ratios were reported using Cox proportional hazard test. All statistical analyses were performed using STATA®, version 14.1 (StataCorp LLC, College Station, Texas), with p values <0.05 considered statistically significant.

RESULTS

The average age of patients who met inclusion criteria was 47.7±15.9 years. The median followup time amongst the 304 studied patients was 64.4 months (range 55.3–80.6). The time to initial surveillance urethroscopy was 3.7 months (range 3.1–4.8) following urethroplasty. Table 1 demonstrates the demographics and clinical characteristics of the 304 study participants. Of these, 194 were found at initial urethroscopy to have a completely normal lumen, 60 with a urethral lumen ≥17Fr and 50 with a urethral lumen <17Fr. The sensitivity analysis showed a significant difference in several variables including hypertension, previous

Table 1. *Demographics and clinical characteristics of 304 study participants according to initial postoperative cystoscopic evaluation*

	Normal Lumen		≥17F Stricture		<17F Stricture		p Value*
Total No. participants (%)	194	(63.8)	60	(19.7)	50	(16.5)	
Mean yrs age (SD)	46.9	(16.2)	49.2	(15.6)	48.7	(14.9)	0.54
Mean kg/m^2 body mass index (SD)	29.1	(7.8)	29.8	(6.9)	30.1	(8.4)	0.64
No. coronary artery disease (%)	8	(4.1)	0	(0)	0	(0)	0.16
No. chronic obstructive pulmonary disease (%)	6	(3.1)	0	(0)	2	(4)	0.33
No. diabetes (%)	29	(15.0)	7	(11.7)	6	(12.0)	0.75
No. hyperlipidemia (%)	48	(24.7)	9	(15.0)	9	(18.0)	0.22
No. hypertension (%)	73	(37.6)	18	(30.0)	19	(38.0)	0.54
No. smoking history (%):							0.80
Never smoked	120	(61.9)	37	(61.7)	32	(64.0)	
Current smoker	13	(6.7)	5	(8.3)	1	(2.0)	
Previous smoker	43	(22.2)	13	(21.7)	10	(20.0)	
Not reported	18	(9.3)	5	(8.3)	7	(14.0)	
No. previous urethroplasty (%)	38	(19.6)	10	(16.7)	6	(12.0)	0.44
Mean cm stricture length (SD)	3.6	(2.8)	4.4	(2.8)	4.2	(2.9)	0.11
No. stricture locations (%):							
Meatus	18	(9.3)	5	(8.3)	2	(4.0)	0.57
Fossa navicularis	22	(11.3)	5	(8.3)	5	(10.0)	0.80
Distal penile	25	(12.9)	11	(18.3)	6	(12.0)	0.52
Mid penile	24	(12.4)	14	(23.3)	5	(10.0)	0.07
Proximal penile	25	(12.9)	20	(33.3)	4	(8.0)	**<0.001**
Distal bulbar	34	(17.5)	28	(46.7)	16	(32.0)	**<0.001**
Mid bulbar	81	(41.8)	31	(51.7)	27	(54.0)	0.18
Proximal bulbar	106	(54.6)	29	(48.3)	30	(60.0)	0.47
Membranous	38	(19.6)	8	(13.3)	6	(12.0)	0.31
No. stricture etiology (%):							
External trauma	35	(18.0)	8	(13.3)	8	(16.0)	0.69
Hypospadias	9	(4.6)	2	(3.3)	1	(2.0)	0.91
Iatrogenic recurrent stricture	38	(19.6)	10	(16.7)	6	(12.0)	0.44
Idiopathic	101	(52.1)	31	(51.7)	27	(54.0)	0.97
Infectious	10	(5.2)	3	(5.0)	2	(4.0)	1.00
Internal trauma	36	(18.6)	15	(25.0)	9	(18.0)	0.52
Lichen sclerosus	10	(5.2)	2	(3.3)	3	(6.0)	0.80
Radiation	8	(4.1)	1	(1.7)	1	(2.0)	0.72
No. primary repair type (%):							
Substitution dorsal onlay	39	(20.1)	22	(36.7)	11	(22.0)	**0.03**
Substitution ventral onlay	28	(14.4)	11	(18.3)	19	(38.0)	**0.001**
Substitution dorsal inlay	11	(5.7)	1	(1.7)	2	(4.0)	0.52
Augmented anastomotic repair with buccal dorsal or ventral onlay	22	(11.3)	7	(11.7)	6	(12.0)	0.99
First stage dorsal or lateral onlay with or without plate excision	15	(7.7)	5	(8.3)	3	(6.0)	0.95
EPA	77	(39.7)	10	(16.7)	4	(8.0)	**<0.001**
EPA (nontransected)	5	(2.6)	2	(3.3)	3	(6.0)	0.41
Other	11	(5.7)	7	(11.7)	5	(10.0)	0.22
Median mos time to initial postop cystoscopy (IQR)	3.6	(3.0–4.2)	3.7	(3.4–6.4)	3.9	(3.4–5.5)	0.06
Median mos length of followup (IQR)	63.7	(55.2–80.3)	60.6	(54.4–75.4)	72.2	(59.2–98.9)	**0.01**

Statistically significant p values are shown in bold typeface.
* Determined using Fisher's exact, 1-way ANOVA, Pearson's chi-squared and Kruskal–Wallis tests where appropriate.

Table 2. *Characteristics of post-urethroplasty recurrent strictures requiring intervention in 72 cases*

	Normal Lumen		≥17Fr Stricture		<17Fr Stricture		p Value*
No. recurrent strictures requiring intervention/total No. (%)	29/194	(15.0)	11/60	(18.3)	32/50	(64.0)	**<0.001**
Mean cm recurrence length (SD)	1.9	(2.0)	1.6	(1.9)	3.1	(2.9)	0.09
Mean cm primary stricture length (SD)	4.1	(3.0)	4.9	(3.2)	4.4	(3.2)	0.72
No. recurrence locations (%):							
Excisional anastomosis	6	(20.7)	2	(18.2)	7	(21.9)	1.00
Proximal graft	4	(13.8)	5	(45.5)	4	(12.5)	0.06
Mid graft	7	(24.1)	2	(18.2)	16	(50.0)	0.05
Distal graft	5	(17.2)	3	(27.3)	4	(12.5)	0.52
Other	6	(20.7)	0	(0)	3	(9.4)	0.18
No. type of treatments for recurrent stricture (%):							
DVIU	10	(34.5)	6	(54.6)	22	(68.8)	**0.03**
Urethral dilation	10	(34.5)	4	(36.4)	7	(21.9)	0.53
Clean intermittent catheterization	0	(0)	0	(0)	1	(3.1)	
Revision urethroplasty	14	(48.3)	5	(45.5)	13	(40.6)	0.86
Median mos time from first surgery and reintervention (IQR)	43.7 (29.5–59.3)		18.4 (9.1–32.9)		11.8 (4.3–28.4)		**<0.001**

Statistically significant p values are shown in bold typeface.
* Determined using Fisher's exact, 1-way ANOVA and Pearson's chi-squared tests where appropriate.

urethroplasty, and location of the stricture, among others (supplementary table 1, https://www.jurology.com). Of the 304 patients, 72 (23.7%) underwent reintervention; 32/72 (44.4%) had a <17Fr lumen at time of first postoperative urethroscopy. This corresponded to 32/50 (positive predictive value 64%) of the <17Fr population requiring reoperation during the study period. A urethral caliber of ≥17Fr was found to have equivalent outcomes in the need for secondary intervention when compared to a lumen that was completely free of scar recurrence (15% vs 18.3% reoperation rate, p=0.53). The negative predictive value that a reoperation is not required amongst those with a lumen size ≥17Fr was 84.3%. The most common surgery in failure cases was DVIU followed by revision urethroplasty (table 2).

The Kaplan–Meier graph shows the post-urethroplasty cumulative probability of intervention-free survival according to postoperative urethroscopy group (fig. 1). The 1-, 3- and 9-year cumulative probability of intervention was 0.01, 0.06 and 0.23 for those with normal urethroscopy, 0.05, 0.17 and 0.18 for those with a ≥17Fr lumen and 0.32, 0.50 and 0.73 for those with a <17Fr lumen, respectively. A log-rank test of equality demonstrates the cumulative probability of intervention is not equal among the 3 groups (p <0.001). Compared to the normal urethroscopy group, the unadjusted hazard ratio was 6.7 (95% CI 4.0–11.1, p <0.001) in the <17Fr lumen group and 1.4 (95% CI 0.7–2.9, p=0.32) in the ≥17Fr group, which was found to increase in our adjusted model (table 3). Similarly, when stratified by the type of urethroplasty, the <17Fr group had higher hazard ratios compared to normal lumen in both substitution and excision and primary anastomosis (EPA) techniques (supplementary table 2, https://www.jurology.com). In

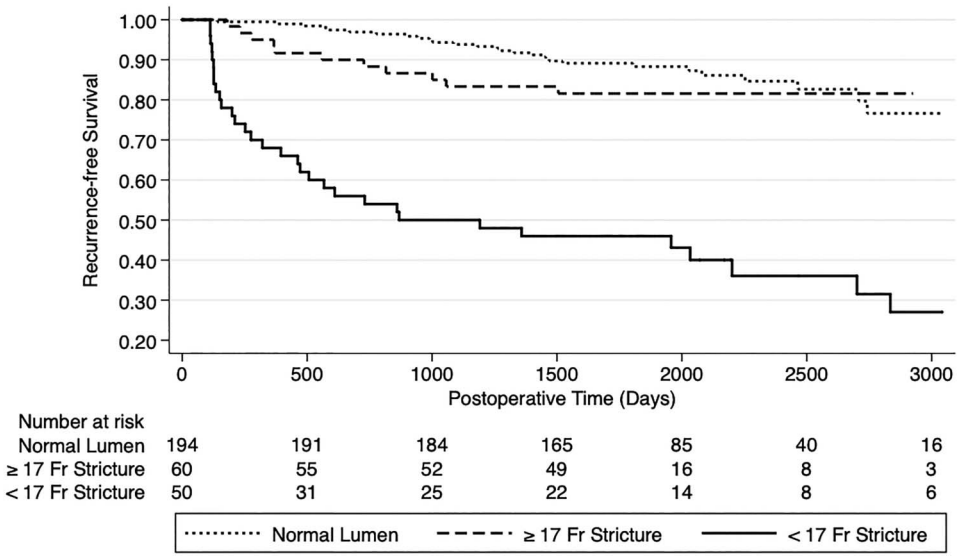

Figure 1. Cumulative probability of recurrence-free survival after urethroplasty (log-rank test for equality of survivor functions, p <0.001).

Table 3. *Adjusted and unadjusted hazard ratios for reintervention after primary urethroplasty*

	Unadjusted HR (95% CI)	p Value	Adjusted HR (95% CI)*	p Value
Normal lumen	Reference		Reference	
≥17Fr stricture	1.4 (0.7–2.9)	0.32	1.4 (0.7–2.8)	0.36
<17Fr stricture	6.7 (4.0–11.1)	<0.001	7.0 (4.2–11.8)	<0.001

* Adjusted for age and stricture length.

addition, no significant differences were observed in hazard ratios of those with ≥17Fr strictures compared to normal lumen in both techniques. However, we were not able to calculate hazard ratios for cases with nontransecting EPA due to insufficient sample size.

Patient-reported measures for sexual and urinary function were compared in these groups of urethroscopy findings. The median time from preoperative questionnaires to urethroplasty was 1.3 month (range 0–2.8). The median time from urethroplasty to first postoperative questionnaires was 3.8 months (range 3.4–4.3). Lastly, the median time from urethroplasty to most recent postoperative questionnaires was 27.9 months (range 16.1–54.9). The median score and interquartile ranges are demonstrated in figure 2. We found that most PROMs were not significantly different among the 3 study groups at different stages of treatment. The only significant finding was observed in the most recent postoperative IPSS across the urethroscopy categories. We also assessed the predictive value of PROMs in those with normal and ≥17Fr strictures for the need of reintervention. We found that no statistically significant differences existed when stratified by reintervention.

DISCUSSION

We present the results of a multicenter study with a minimum followup of 4 years that uses the results from early postoperative surveillance urethroscopy

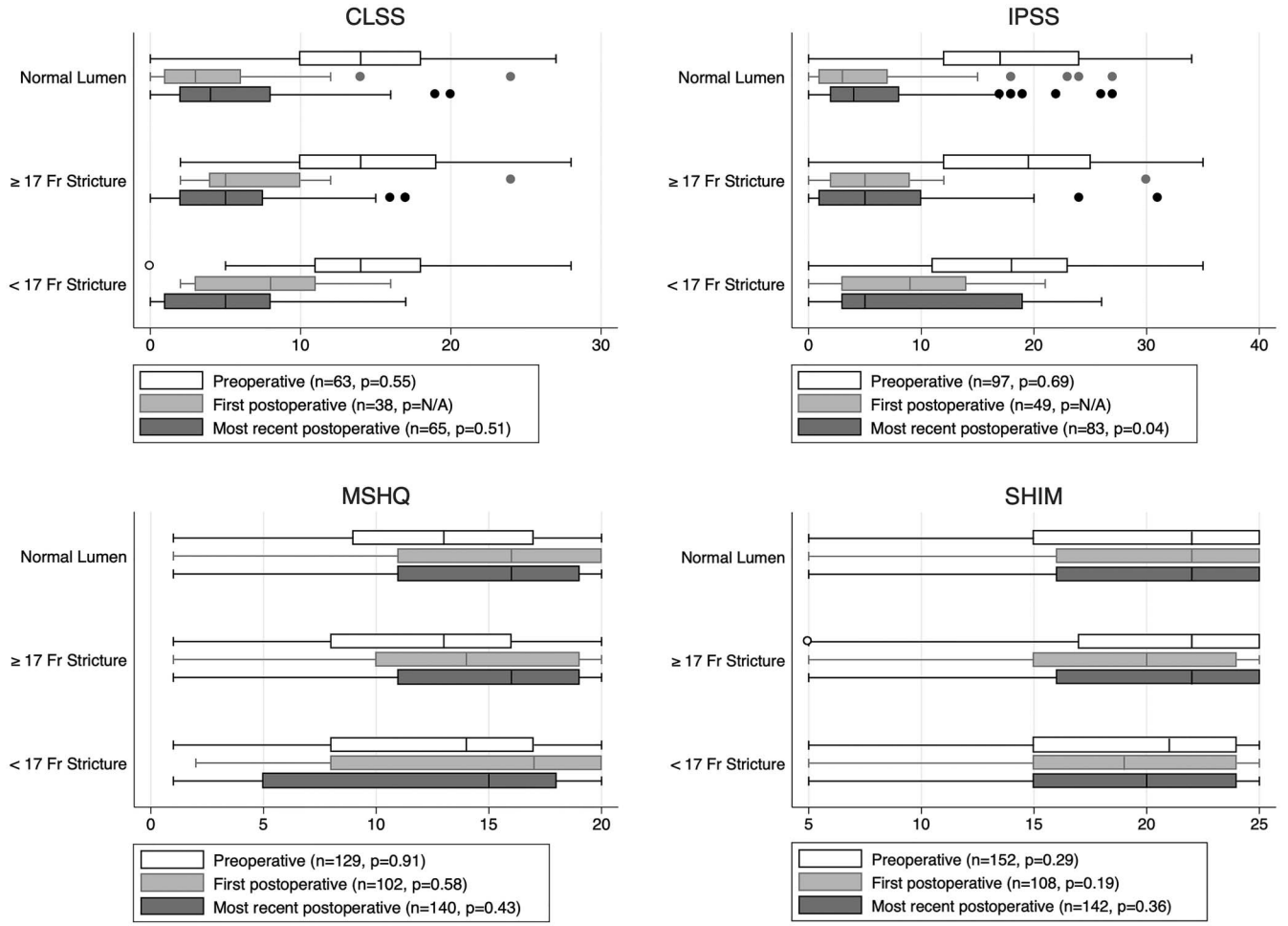

Figure 2. Preoperative, first postoperative and most recent postoperative quality of life scores defined by initial postoperative cystoscopy categories. *CLSS,* Core Lower Urinary Tract Symptom Score.

to predict the later receipt of reintervention for urethral stricture. Our results demonstrated several important findings. First, the ability to pass a 17Fr cystoscope at 3–4 months postoperatively portends a superior long-term success (defined as the patient not needing further surgical management) of urethroplasty when compared to a lumen that cannot accommodate the cystoscope. Furthermore, our results demonstrated that even in situations when a urethra is somewhat narrowed but is at least 17Fr it provides an equivalent outcome when compared to a lumen with no evidence of stricture recurrence. This finding correlates with prior studies that suggest some men are truly asymptomatic from mild urethral stricture disease, only exhibiting symptoms of obstruction when the lumen becomes critically narrowed.[15] It should be noted that in this study 36% of patients with <17Fr lumen at surveillance did not require reintervention; however, this proportion was significantly higher in patients with ≥17Fr (81.7%) and normal lumens (85%; p <0.001, table 2).

The results of this study demonstrated that at the time of first followup if a urethral lumen is unable to accommodate a flexible cystoscope this patient population should be monitored more closely as the probability of recurrence-free survival diminishes over time. An area of further study would be to correlate surveillance cystoscopic findings with the patient's presentation that requires reintervention. Our data set does not report the reason for reintervention.

On the other hand, patients with ≥17Fr or normal lumens had a stable probability of recurrence-free survival after a period of followup (fig. 1), which means less aggressive followup protocols may be warranted in this population. By proposing a risk-stratified followup protocol after urethroplasty, Belsante et al showed that patients who have undergone uncomplicated EPA may not benefit from aggressive followup protocols given the high success rates of this technique.[16] Interestingly, our study indicated that patients with a normal or a ≥17Fr lumen in surveillance urethroscopy were more likely to have undergone EPA compared to those with a<17Fr lumen (table 1). This finding further endorses the idea that a close followup after successful EPA may be low yield for detection of recurrences.

Recently, European guidelines on urethral stricture disease provided recommendations for using PROMs with the use of cystourethroscopy on an as-indicated basis.[17] This guideline was derived from a study of 46 men who were followed with PROMs for 2 years following anterior urethroplasty across 4 centers in the United Kingdom.[3] While our study did not find a correlation between PROMs and cystourethroscopy, we present a study with longer followup. When our data set was used to compare 1-year outcomes between PROMs and cystourethroscopy at 3 months following urethroplasty, patients who required re-intervention had both greater stenosis on cystoscopy and scores on PROMs which were numerically worse; however, the differences on PROMs failed to reach statistical significance.[2] Thus, while there is evidence for the use of PROMs for short or intermediate followup, we demonstrate that longer-term outcomes are better predicted with cystourethroscopy.

By assessing PROMs, we found even those with a normal or a ≥17Fr urethral lumen reported approximately the same subjective symptoms as those with a higher-grade stricture recurrence. Therefore, we conclude that obtaining a subjective assessment from the patient is insufficient to determine their risk of recurrence. This finding can be explained by several underlying causes including misunderstanding of PROM domains, inaccurate responses to questions, and inability of current PROMs to capture stricture symptoms. Thus, objective testing may be prudent. The initial surveillance cystoscopy can be done by a local urologist in order to reduce patient burden for travelling long distances when referred to a reconstructive center. This could even lead to increased adherence of patients to the followup protocol. Although this means that the patient must physically be present in the office, our report illustrates that if the initial postoperative cystoscopy demonstrates an excellent result these patients do not warrant aggressive surveillance. By identifying through postoperative cystoscopy who is truly at risk, we can divert our attention to the subpopulation of postoperative patients who stand the most likely chance of needing repeat surgery and produce a significant reduction in costs.

Our study has several limitations that should be acknowledged. One limitation is that there remains some level of failure even associated with a urethral caliber ≥17Fr. As a result, further work is needed to determine additional factors that govern stricture recurrence as ~20%–25% of patients with a favorable cystoscopic exam will inevitably fail in the long term (fig. 1). A cystoscopy at 3 months might be too soon and thus a proportion of these urethras which are found to be of excellent caliber at 3 months might be critically stenosed if the cystoscopy was accomplished at 6 or even 12 months. The downside to choosing to delay the initial surveillance cystoscopy is that our data demonstrate that most recurrences happen within the first year, which is consistent with prior studies.[18] Thus, the longer one waits to perform the initial surveillance examination, the higher risk there may be to catch an issue before there may be an acute presentation. There is

also an inherent selection bias. We found that 72/304 (23.7%) of patients required a reoperation and thus were deemed a failure. Though this success rate is certainly lower than what is traditionally quoted for urethroplasty, it is likely that our analysis overestimates patients with recurrence as these individuals are more likely to seek care and therefore more likely to have a more robust followup to be included in our study. This mirrors the significant differences found in the sensitivity analysis when comparing our cohort to all urethroplasty patients presenting to the TURNS group.

CONCLUSIONS

Direct cystoscopic visualization of early recurrence of urethral stricture disease following urethroplasty is a significant long-term predictor for patients who will eventually require repeat intervention. Poor concordance between PROMs and either objective cystoscopic data or the need for further surgery demonstrate that while symptoms should always be incorporated in any decision to pursue an invasive procedure, PROMs provide an incomplete surveillance method. Our findings highlight the need to define surgical failure and best follow these patients after urethroplasty.

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EDITORIAL COMMENTS

This is a thoughtful presentation of objective data, providing a significant contribution to the evidence-based literature (reference 3 in article). A reduced urinary flow rate with a normally functioning bladder and hence symptoms only occurs with urethral calibers below 11Fr, resulting in a reduced diagnosing of stricture recurrence.

A single-center publication reviewed postoperative flexible urethroscopy in 144 patients at 3, 6 and 12 months, and then annually (median followup, 22 months). Most stricture recurrences (26/27, 96%) were detected within the first year. Urinary peak flow rate data were documented for only 11/27 of these recurrences, but 7 patients had flow rates >15 ml/s.[1]

Flexible anterior urethroscopy is a readily available minimally invasive procedure not needing to traverse the distal urethral sphincter, so it is quick to perform and well tolerated. It provides unequivocal objective anatomical followup relating to stricture recurrence.

In a 2013 survey, Society of Genitourinary Reconstructive Surgeons members (response rate: 48.9%, 90), 85% used uroflowmetry, 56% used postvoiding residual, 19% used flexible cystoscopy and 17% used retrograde urethrography during followup. Most surgical series authors define urethroplasty failure as “need for a secondary procedure” and do not use validated questionnaires, a standardized definition

for stricture recurrence or a standardized followup protocol (reference 4 in article). As such, followup protocols vary widely, making meaningful interstudy comparisons difficult. It is therefore unsurprising that there is significant variability in reported results of urethroplasty, as symptomatic assessment will overestimate the stricture-free success rate.

The evidence-based European Association of Urology guideline recommends the use of patient-reported outcome measure questionnaires to assess subjective outcomes and patient satisfaction, and the use of cystoscopy to assess anatomical success after urethroplasty (reference 17 in article). It is noteworthy that evidence cited for patient-reported outcome measures has a high strength rating, while conversely cystoscopy remains weak; undoubtedly publications such as this will strengthen the evidence base, supporting more widespread urethroscopy use in urethroplasty followup protocols.

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Surgical reconstruction is currently the gold standard in the treatment of urethral stricture disease. However, despite continuous technical refinements, some patients' surgeries will fail and there is, unfortunately, the constant undesirable degree of uncertainty about the future outcome. Long-term followup is therefore a crucial component of management.

Although several preoperative predicting factors have been identified that help us better select and counsel our patients, we lack reliable postoperative tools to monitor and identify those patients at a higher risk of recurrence. Noninvasive methods such as uroflowmetry and postvoid residual urine have been evaluated but found to be not sensitive enough.

This multicentric study from the Trauma and Urologic Reconstructive Network of Surgeons evaluated the ability of postoperative surveillance cystoscopy performed 3–4 months after a urethroplasty to predict stricture failure within the next 4 years. The analysis shows that the inability to pass a 17Fr cystoscope at that time due to a narrowness is a significant predictor of future failure. The study is interesting since the role of surveillance cystoscopy has been controversial. However, in light of these results, it would appear a very useful tool for early identification (at 3 or 4 months after the operation) of those patients who are at greater risk of recurrence who would therefore benefit from a closer followup. These findings may result in a change of practice regarding the followup protocols. A second point of interest in this study is the finding that the questionnaires—also a noninvasive tool—were shown to be very ineffective in predicting recurrence, thus supporting the convenience of a more invasive surveillance approach.

The controversy will no doubt continue, and further research is certainly warranted, mainly into its cost-effectiveness and the compliance that asymptomatic patients will have with said protocol.

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