

## The Impact of Ventral Oral Graft Bulbar Urethroplasty on Sexual Life

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<b>OBJECTIVE</b>	To evaluate the pre- and postoperative aspects of sexual life (SL) in patients with bulbar urethral stricture who underwent ventral oral graft urethroplasty.
<b>METHODS</b>	Between 2009 and 2010, 52 men (mean age 36 years) were enrolled in our prospective study to ascertain sexual disorders before and after surgery. The validated Male Sexual Health Questionnaire-Long Form (MSHQ-LF) was completed pre- and postoperatively; the unvalidated but adapted Post-Urethroplasty Sexual Questionnaire (PUSQ) was completed postoperatively. Data were compared using the non parametric Wilcoxon test.
<b>RESULTS</b>	Before urethroplasty, most of the patients reported sexual disorders, in particular reduced ejaculatory stream (85%); many of them (35%) feared the risk of a postoperative worsening in the quality of SL. After urethroplasty, nobody reported a worsened erection, while most of the patients noticed a significant improvement in erection, ejaculation, relationship with their partner, sexual activity, and desire. Modifications in the scrotoperineal sensitivity were reported by 42% and 15% noticed esthetic changes without impact on SL. All patients reported an improvement in quality of life (QOL) and were satisfied with the outcome of urethroplasty.
<b>CONCLUSION</b>	Urethral stricture disease may be responsible for sexual disorders that have a significant impact upon SL. Patients confessed a marked anxiety tackling urethroplasty and declared that one of their deepest fears regarded a potential further deterioration in the quality of SL. At short-term follow-up, the minimally invasive ventral graft urethroplasty does not cause sexual complications, apart from the post-ejaculation dribbling. On the contrary, this technique showed to restore SL in all its aspects. UROLOGY 81: 891–898, 2013. © 2013 Elsevier Inc.

As there is an increasingly widespread use of urethroplasty for urethral stricture treatment,<sup>1</sup> the potential complications of the surgery need to be better understood in order to reduce their probability of occurrence and enable the specialist to provide the right information during counseling.

With the aim of studying sexual complications after urethroplasty, some authors have recently used different validated questionnaires such as International Index of Erectile Function, International Index of Erectile Function-5, Male Sexual Health Questionnaire Ejaculatory Dysfunction (MSHQ-EjD) short form, Brief Male Sexual Function Inventory, Sexual Life Quality Questionnaire, or Coursey's questionnaire.<sup>2-10</sup> Others used adapted but nonvalidated questionnaires.<sup>11,12</sup> However, most of the studies mix repairs of different urethral segments and different reconstructive techniques making interpretation of results difficult.

Literature has supposed that bulbar urethroplasty has the potential to adversely affect sexual life (SL), potentially involving different anatomic structures concerned with sexual function,<sup>2-6</sup> but, to date, it is lacking an exhaustive analysis of several pre- and postoperative aspects of SL in selected series of patients undergoing bulbar reconstruction.

We evaluated the effect of the ventral oral graft urethroplasty in patients with bulbar stricture disease using the MSHQ-Long Form (LF) and the unvalidated Post-Urethroplasty Sexual Questionnaire (PUSQ) to ascertain various sexual complications, particularly with regard to ejaculatory dysfunctions, genital sensitivity disorders, and impact on SL.

To our knowledge, this is the first study reporting the effect of graft bulbar urethroplasty on SL by means of the MSHQ-LF.

### MATERIAL AND METHODS

#### Study Population

Between 2009 and 2010, a consecutive series of 105 patients treated with a ventral oral graft bulbar urethroplasty were offered enrollment in a prospective study evaluating sexual disorders before and after surgery. The study was approved by our ethics committee.

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All patients were evaluated and surgically treated by the same urologist (Enzo Palminteri) at our referral Center for Urethral Surgery.

Regarding the urethral stricture disease, preoperative investigations included detailed clinical history, uroflowmetry, retrograde and voiding cystourethrography, and urethroscopy. Postoperative assessment included uroflowmetry and urine culture every 4 months in the first year and annually thereafter. Urethrography and urethroscopy were performed in patients presenting obstructive symptoms or peak flow rate <14 mL/s. Urethral reconstruction was considered a failure when any postoperative procedure was needed, including dilatation.

Exclusion criteria for the enrollment in the study included several aspects potentially impacting on sexual function: patients <18 or >60 years old; patients sexually inactive or with concomitant pathologies such as obesity, diabetes, hypertension, cardiovascular diseases, neurological diseases; smoking patients; patients with genital disorders such as lichen sclerosus, failed hypospadias repair, and penile curvature; patients with a history of previous urethroplasty or penile surgery; and patients in which our urethral reconstruction had an unsuccessful outcome.

All enrolled patients completed, preoperatively (1 month before surgery) and postoperatively (1 year after the surgery), the validated MSHQ-LF.<sup>13</sup> One year after the surgery, they also completed an unvalidated but adapted PUSQ developed by our group of reconstructive urologists to ascertain several pre- and postoperative changes.

### Surgical Technique

Through a Y-inverted incision, the bulbocavernosus muscles were gently divided, exposing the bulbar urethra minimally and without its mobilization. All urethroplasties were performed without sectioning the central tendon of perineum, including those for the repair of proximal bulbar strictures. The strictured tract was opened by the ventral-sagittal urethrotomy approach and the oral graft was sutured to the mucosal margins of the exposed urethral plate. A few stitches fixed the ventral spongiosum to the graft. Finally, the adventitia of the spongiosum was closed over the graft.

### Description of Questionnaires

The MSHQ-LF<sup>13</sup> was developed and validated to assess several aspects regarding male sexual dysfunctions. It is a 25-item self-administered questionnaire that comprises 3 core domains (erection, ejaculation, and satisfaction with SL) and additional items related to sexual activity, desire, and bother concerning sexual dysfunction. Every question scores from 5 (best situation) to 0 (worst situation): erection score 0-15 (Q1-Q3); erection bother score 1-5 (Q4); ejaculation score 1-35 (Q5-Q11); ejaculation bother score 1-5 (Q12); satisfaction score 6-30 (Q13-Q18); and sexual activity and desire score 1-35 (Q19-Q25).

The PUSQ was designed to ascertain pre- and postoperative changes in SL. It is a 32-item self-administered questionnaire comprising 8 core domains: sexual disorders before urethroplasty; changes in erection, ejaculation, genital cosmesis, and genital sensitivity after urethroplasty; degree of satisfaction after urethroplasty and impact on SL; and importance of counseling. The questionnaire was designed by the group of experts who work in our referral Center for Urethral Surgery, and it is based on their long experience in managing patients with urethral stricture disease.

### Statistical Analysis

Statistical analysis was performed using the SPSS 12.0 software. Pre- and postoperative scores of the MSHQ were compared using the nonparametric Wilcoxon test. Data are presented as median (range). An alpha value of 5% was considered as the threshold for significance.

### RESULTS

A total of 52 patients (50%) completed the study. Fifty-three men were excluded from the study because they did not fulfill our inclusion criteria or because they did not complete the questionnaires postoperatively.

Mean patient age was 36 years (range 19-60 years). Etiology of stricture was a catheter in 8 patients and unknown in 44 patients. Average stricture length was 2.2 cm (range 1-5 cm).

Table 1 and Table 2 show, respectively, the mean pre- and postoperative scores for total score, principal domains, and single question of the MSHQ-LF. Data demonstrated a posturethroplasty improvement both in total score ( $P = .001$ ) and in each of the principal domains; particularly, there has been a significant improvement in erection score and erection bother score ( $P = .0001$ ,  $P = .008$ , respectively), ejaculation score and ejaculation bother score (both  $P = .0001$ ), and sexual activity and desire score ( $P = .0001$ ), as well as in each of the single questions of these domains.

Table 3 shows the results of the PUSQ. Regarding the preoperative disorders related to the urethral stricture in particular, 44 patients (85%) reported reduced ejaculatory stream, 14 (27%) had painful ejaculations, and 14 (27%) had ejaculation failures. These and others sexual disorders have persisted for a long time (>5 years in 30 patients, 58%) and influenced enough or markedly (24 patients, 46%) their quality of life (QOL).

Regarding the changes in erections after urethroplasty, nobody complained of a worsened erection, whereas 18 patients (35%) reported an improved erection.

Regarding the changes in ejaculation after urethroplasty, 34 patients (65%) had an improved ejaculation. Ten patients (19%) reported a worsened ejaculation.

Regarding the postoperative sensitivity genital disorders, 22 patients (42%) localized them in the scrotoperineum. Two patients (4%) felt their glans cold during erection. Nobody reported problems in the sexual activity because of these sensitivity disorders.

Regarding the changes in genital cosmesis, 8 patients (15%) noticed esthetic changes, mainly located in the scrotum and/or in the perineum. Nobody experienced problems in their sexual activity because of these esthetic changes.

No patient reported problems in their sexual activity because of oral harvesting.

Regarding the surgery impact on SL, 14 patients (27%) reported an increased frequency of intercourses, whereas 4 (8%) reported a decreased frequency. Nobody reported a decreased sexual desire, whereas 36 patients (69.2%) reported an improved desire. The quality of SL improved in

**Table 1.** Pre- and postoperative changes for principal domains and total score of the MSHQ

Domain	Preoperative	Postoperative	P Value
Erection score (questions 1-3)	13.5 (range 9-15)	15 (range 9-15)	.0001
Erection bother score (question 4)	5 (range 1-5)	5 (range 4-5)	.008
Ejaculation score (question 5-11)	25.5 (11-33)	32.5 (24 -35)	.0001
Ejaculation bother score (question 12)	4 (range 1-5)	5 (range 2-5)	.0001
Satisfaction score (questions 13-18)	24 (15-30)	24 (14-30)	.053
Sexual activity and desire score (questions 19-25)	25 (9-31)	28 (24-32)	.0001
Overall MSHQ score	95 (63-117)	109 (100-122)	.001

MSHQ, male sexual health questionnaire.

**Table 2.** Pre- and postoperative values for each single question of the MSHQ

Domain	Questions	Preoperative	Postoperative	P Value	
Erection score	Q1	5 (1-5)	5 (3-5)	.004	
	Q2	5 (3-5)	5 (3-5)	.001	
	Q3	5 (3-5)	5 (3-5)	.001	
Erection bother score	Q4	5 (1-5)	5 (4-5)	.004	
Ejaculation score	Q5	5 (2-5)	5 (4-5)	.002	
	Q6	4 (2-5)	5 (2-5)	.0001	
	Q7	4.5 (2-5)	5 (4-5)	.0001	
	Q8	3 (1-5)	5 (1-5)	.0001	
	Q9	4 (1-5)	5 (3-5)	.0001	
	Q10	3 (1-4)	3.5 (3-5)	.0001	
	Q11	4 (1-5)	5 (4-5)	.0001	
	Q12	4 (1-5)	5 (2-5)	.0001	
Ejaculation bother score	Q13	4 (2-5)	4 (2-5)	.058	
Satisfaction score	Q14	4 (2-5)	4 (2-5)	.317	
	Q15	4 (1-5)	4 (2-5)	.566	
	Q16	4 (2-5)	4 (2-5)	.527	
	Q17	4 (2-5)	4 (2-5)	.527	
	Q18	4 (3-5)	4 (3-5)	.058	
	Sexual activity and desire score	Q19	3 (1-5)	4 (2-5)	.001
		Q20	3 (1-3)	3 (2-5)	.0001
		Q21	4 (1-5)	5 (3-5)	.0001
		Q22	4 (2-5)	4 (3-5)	.014
		Q23	4 (1-5)	4 (3-5)	.014
		Q24	5 (2-5)	5 (4-5)	.005
		Q25	3 (1-4)	3 (3-5)	.0001

Abbreviation as in Table 1.

34 patients (66%). The sentimental relationship with their partner resulted in improvement in 12 patients (23%).

Regarding the satisfaction degree with urethroplasty, all patients (100%) reported an improved QOL and were satisfied with the final result of urethroplasty.

In relation to the importance of counseling, 38 patients (73%) declared a medium/high anxiety degree tackling urethroplasty and 50 patients (96%) declared that it is important to be informed in detail about the various surgical techniques that could be used during urethroplasty. Thirty-eight patients (73%) declared they had been provided with all the necessary information regarding possible sexual complications after urethroplasty, whereas 14 patients (27%) denied having been adequately informed.

Regarding the most significant fears before undergoing urethroplasty, 44 patients (85%) declared to be afraid that surgery might not resolve their problem, 18 patients (35%) said they were afraid of a postoperative worsening in the quality of SL, and 16 patients (31%) reported to be afraid of the postoperative genital scars.

## COMMENT

### Sexual Disorders Because of Urethral Stricture

Urethral stricture is a long-term pathology in which the impact on QOL and SL has hardly been studied. Our study has shown that the disease has a significant impact on SL, particularly in relation to the ejaculatory function: reduced stream (85%), painful ejaculation (27%), ejaculation failure (27%), and infections or burning after sexual intercourse (19%).

### Sexual Disorders Posturethroplasty in Literature

Urethral reconstruction also has a potential impact on SL as it involves several anatomic structures concerning the sexual function. From this point of view, it should be noted that posturethroplasty sexual disorders represent an increasingly acknowledged complication in literature, but most of the studies mix either anterior with posterior strictures or different surgical techniques.<sup>5,9,14</sup> Various authors suggest that the higher sexual complication rate

**Table 3.** Results of the unvalidated but adapted PUSQ

	No. of Patients (%)
<b>A. Sexual disorders before urethroplasty:</b>	
1. Before urethroplasty, which sexual disorders did you have? (You can mark more than one.)	
Infections or burning after sexual intercourse	10 (19)
Reduced ejaculatory stream	44 (85)
Ejaculation failure	14 (27)
Painful ejaculation	14 (27)
Hemospermia	4 (8)
Reduced sexual desire	2 (4)
Other sexual disorder	//
2. Before urethroplasty, for how many years did you have sexual problems?	
Less than 1 y	2 (4)
Between 1 and 5 y	20 (39)
Between 6 and 10 y	10 (19)
More than 10 y	20 (38)
3. Before urethroplasty, how much did sexual disorders influence your quality of life?	
Not at all	14 (27)
A little	14 (27)
Enough	16 (31)
Markedly	8 (15)
<b>B. Changes in erection after urethroplasty:</b>	
4. After urethroplasty, how would you describe your erections?	
Worsened	//
The same	34 (65)
Improved	18 (35)
5. After urethroplasty, have you noticed a curvature of the penis?	
Not at all	48 (92)
A little	4 (8)
Markedly	//
6. After urethroplasty, have you noticed a penile shortening?	
Not at all	50 (96)
A little	2 (4)
Markedly	//
7. After urethroplasty, is the glans completely swollen during erection?	
It does not swell	//
It swells only partially	//
It swells at the beginning of the erection, but it does not remain fully inflated during the entire sexual act	//
It swells completely and normally	52 (100)
<b>C. Changes in ejaculation after urethroplasty:</b>	
8. After urethroplasty, has your ejaculation changed?	
Worsened:	10 (19)
Because the stream is reduced or obstructed	8 (15)
Because of the postejaculation dribbling	6 (12)
Because of the difficulty to ejaculate	2 (4)
The same	10 (19)
Improved:	34 (65)
Because the stream is stronger and/or nonobstructed	32 (61)
Because the burning/pain during ejaculation has disappeared	16 (31)
9. Ejaculatory problems are present:	
Never	40 (77)
Sometimes	4 (8)
Always	8 (15)
<b>D. Sensitivity genital disorders:</b>	
10. After urethroplasty, have you noticed a change regarding the sensitivity of the genitalia?	
No	26 (50)
Yes, in the glans	4 (8)
Yes, in the penile skin	//
Yes, in the scrotum	10 (19)
Yes, in the perineum	12 (23)
11. If yes, your genital sensitivity has changed in relation to:	
Touch	20 (38)
Hot/cold	2 (4)
Other problems	2 (4)
12. After urethroplasty, do you feel your glans cold during erection?	
No	50 (96)
Yes	2 (4)

**Table 3.** Continued

	No. of Patients (%)
13. After urethroplasty, have you experienced problems in the sexual activity due to these sensitivity genital disorders?	
No	52 (100)
Yes	//
E. Changes in genital cosmesis after urethroplasty:	
14. After urethroplasty, have you noticed esthetic changes in the genitalia?	
No	44 (85)
Yes	8 (15)
15. If yes, where do you locate these esthetic changes?	
In the meatus	//
In the glans	//
In the penile skin	//
In the scrotum	4 (8)
In the perineum	6 (11)
16. Did you experience problems in the sexual activity due to these esthetic changes?	
Yes	//
No	52 (100)
17. Did you experience problems in the sexual activity related to the oral harvesting?	
Yes	//
No	52 (100)
G. Impact on sexual life:	
18. After urethroplasty, has the frequency of intercourses changed?	
Cancelled	//
Decreased	4 (8)
The same	34 (65)
Increased	14 (27)
19. After urethroplasty, has the sexual desire changed?	
Worsened	//
Improved	36 (69)
The same	16 (31)
20. After urethroplasty, has the quality of sexual life changed?	
Markedly worsened	//
Worsened	//
The same	18 (34)
Improved	32 (62)
Markedly improved	2 (4)
21. After urethroplasty, has the sentimental relationship with your partner:	
Worsened	//
Remained the same	40 (77)
Improved	12 (23)
22. After urethroplasty, your partner considers that your sex life has (question for the partner):	
Worsened	//
Remained the same	28 (54)
Improved	20 (38)
H. Assessment of the degree of satisfaction after urethroplasty:	
23. After urethroplasty, overall has the quality of life changed?	
Markedly worsened	//
Worsened	//
Remained the same	//
Improved	20 (38)
Markedly improved	32 (62)
24. Overall, are you satisfied with the result of urethroplasty?	
Dissatisfied	//
Not very satisfied	//
Satisfied	14 (27)
Very satisfied	38 (73)
25. Would you repeat the urethroplasty?	
Yes	48 (92)
No	4 (8)
I. Importance of counseling:	
26. What was the anxiety degree tackling urethroplasty?	
None	4 (8)
Low	10 (19)

Continued

**Table 3.** Continued

	No. of Patients (%)
Medium	18 (35)
High	20 (38)
27. Is it important to know in detail the different surgical techniques that could be used during the urethroplasty?	
No	2 (4)
Yes	50 (96)
28. Have you been adequately informed about the surgical techniques that would be used during the urethroplasty?	
No	//
Yes	52 (100)
29. Have you been adequately informed about the possible sexual complications after urethroplasty?	
No	14 (27)
Yes	38 (73)
30. Have you been adequately informed about the possible esthetic genital changes after urethroplasty?	
No	22 (42)
Yes	30 (58)
31. How much have you been conditioned by the surgeon in taking the decision to undergo urethroplasty?	
Not at all	18 (35)
A little	22 (42)
Enough	12 (23)
32. What were your fears before urethroplasty?	
None	4 (8)
Will urethroplasty be resolutive?	44 (85)
Will urethroplasty improve the quality of the urinary function?	24 (46)
Will urethroplasty leave evident scars on the genitals?	16 (31)
Will urethroplasty worsen the quality of the sexual life?	18 (35)
Other fears: scars in the oral area or general surgical risks	1 (4%)
Other fears: scars in the oral area or general surgical risks	4 (8)

PUSQ, post-urethroplasty sexual questionnaire.

after bulbar urethroplasty vs penile urethroplasty may be explained by the proximity of the bulbar urethra to the nerves responsible for erection.<sup>2-5</sup> Cavernous nerves are located at the convergence of the crura, remaining outside the urethra at the 1 and 11 o'clock positions. Dissection of the urethra near the intercrural space is more likely to expose erectile nerves to the risk of damage.<sup>9,15-17</sup> Barbagli et al<sup>18</sup> and other authors have warned that the dorsal urethrotomy approach might impair erection when dissection of the bulbar urethra from the corpora is very proximal.<sup>3,4</sup>

Extensive resection and mobilization after anastomotic repairs may likely result in erectile dysfunction.<sup>5</sup> Other complications such as cold glans and decreased penile sensitivity may be related to vascular injury in the spongiosum distally to the transection.<sup>12</sup> Overall, several studies suggest that anastomotic repairs have a more important impact on SL when compared to the impact of graft techniques.<sup>3,9-11,14,19-21</sup>

### Sexual Disorders and QOL After Ventral Graft Urethroplasty

By using a ventral graft urethroplasty without the need for urethral mobilization from the corpora or for urethral transection, our study has shown protection from post-operative erectile dysfunction and other sexual disorders, such as penile shortening. Eighteen patients (35%) reported an improved erection, probably because of

a simple restoration of the urethral function and a reducing of stenosis-related disorders. All the patients (100%) reported a completely swollen glans during erection.

Both the MSHQ-LF and PUSQ showed that after surgery, most of our patients had an improved ejaculation in terms of force, volume, and pleasure because of a nonobstructed stream and the disappearance of the burning/pain during ejaculation. Only 19% of patients reported a worsened ejaculation because of post-ejaculation dribbling or reduced stream. This may be because of the weakening of the ventral graft causing pseudodiverticula or to the surgical trauma of the perineal nerves and/or bulbospongiosus muscle, which are involved in semen expulsion.<sup>3,6</sup> Erickson et al<sup>6</sup> reported that posturethroplasty ejaculatory function was improved in 19% of the patients and worse in 11%. To reduce the risk of ejaculatory disorders we followed some principles: careful midline opening of the bulbospongiosus muscles, avoiding damaging of the nerve branches positioned more laterally, no sectioning of the perineal central tendon that takes part in the ejaculatory mechanism, good coverage of the graft with the spongiosum, and reconstructing the bulbospongiosus muscles.

Our adapted PUSQ showed its usefulness in ascertaining other previously undetected pre- and post-operative changes. Forty-two percent of the patients complained of genital disorder sensitivity localized in the scrotoperineum, probably consequent to the sectioning of

branches of the perineal nerves. Only 4% of patients reported cold glans during erection, unlike the series with transecting techniques, which report this complication in 11% of the cases.<sup>12</sup> However, nobody experienced problems in sexual activity because of these sensitivity disorders. These data seem to refute the hypothesis that perineal nerves play a role in the erection.<sup>16</sup>

Only 15% of the patients noticed scrotal esthetic changes, but without impact on their SL.

For the first time, the impact of the oral harvesting on SL was investigated; nobody reported problems.

Generally, the quality of SL was improved in terms of frequency of intercourse, sexual desire, and sentimental relationship with their partner. QOL resulted in an improvement in all our patients and they were satisfied with the result of urethroplasty; conversely, studies on anastomotic procedures report an overall dissatisfaction with SL of 45%.<sup>19</sup> We can say that the ventral oral grafting techniques seem to be exempt of sexual complications, apart from the postejaculation dribbling. This is because of its being a minimally invasive surgery in which the urethra is not mobilized, transected, or shortened.

Our study highlights the importance of counseling as 73% of the patients confessed a marked anxiety tackling urethroplasty and 96% declared that it is important to know in detail the different techniques that could be used during urethroplasty. Some of the most important fears before urethroplasty regarded the risk of a worsening in the quality of SL and genital scars.

Despite our efforts during counseling, 27% of patients declared they had not been adequately informed about the possible postoperative sexual complications: all this says a lot about the importance that the risk of sexual complications has for the patients.

We are aware that the MSHQ-LF and other sexual-validated questionnaires used in different studies<sup>2-10</sup> have not been specifically designed to evaluate patients after urethroplasty, but currently, the only validated questionnaire for urethral stricture surgery does not include a sexual assessment.<sup>22</sup> Our unvalidated questionnaire confirmed the data obtained by the MSHQ-LF and provided further precious information on SL after urethroplasty.

The limitation of our series was that it involved only ventral oral graft bulbar urethroplasty. Thorough studies should be conducted in the future, comparing different techniques (transecting vs nontransecting, dorsal vs ventral urethral approach, and grafting) through the use of validated and adapted questionnaires that cover all aspects of SL.

Many are the anatomic structures involved in urethroplasty that might impair sexual function. We need to better understand the role of each structure involved in every aspect of SL with the aim of sparing it during surgery and perform a sexuality-preserving urethroplasty.

## CONCLUSIONS

Urethral stricture disease may be responsible for sexual disorders, in particular ejaculatory dysfunction, which

have a significant impact upon SL. Patients confessed a marked anxiety tackling urethroplasty and declared that one of their deepest fears regarded a potential further deterioration in the quality of SL. At short-term follow-up, the minimally invasive ventral graft urethroplasty does not cause sexual complications, apart from the postejaculation dribbling. On the contrary, this technique has been shown to restore SL in all its aspects.

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## EDITORIAL COMMENT

This is a welcome addition to the literature. In its several findings, none is so important as: "...ventral oral grafting techniques seem to be exempt of sexual complications...". The conclusions of this article fit nicely into the larger discussion of which urethroplasty is "better" for short bulbar strictures: ventral buccal onlay or anastomotic urethroplasty. We have been skeptical of the potentially high sexual dysfunction rates of anastomotic urethroplasty and endeavored to avoid these complications by performing ventral onlay buccal urethroplasty in most patients; even in those with short strictures. The finding that ventral onlay buccal urethroplasty does not cause sexual dysfunction is in stark contrast to several articles that have shown significant dysfunction after anastomotic urethroplasty. For example, Barbagli et al<sup>1</sup> reported long-term results from 153 bulbar anastomotic urethroplasties and found a 22% overall sexual complication rate: 14 patients experienced ejaculatory dysfunction, 1 had a cold glans during erection, 7 had soft glans during erections, and 11 had decreased glans sensitivity. Morey and Kizer<sup>2</sup> found that 33% of men who had undergone anastomotic urethroplasty for strictures greater than 2.5 cm resulted in decreased penile length after surgery. Curiously, men with shorter strictures less than 2.5 cm in that study had worse outcomes still: 44% had chordee and 22% had decreased penile length.

This article also very usefully identifies the baseline sexual function deficits that are caused by urethral stricture disease, such as ejaculatory pain, and documents their improvement with urethroplasty. There were expected and unexpected improvements in global sexual health after ventral buccal urethroplasty, including anticipated improvements in ejaculation, but also some surprising improvements in the frequency of sexual activity and the degree of sexual desire after surgery.

Urethroplasty can be complex and difficult for both patient and doctor. Patients face a postsurgery failure rate of about 10% regardless of the procedure chosen. Higher failure rates are seen in complex cases. There is a wide variety of potential complications, although they are mostly uncommon. It is gratifying to understand that concerns for functional sexual complications need not be added to the patient's burden of disease when ventral buccal onlay urethroplasty is chosen.

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## REPLY

Established beliefs concerning outcomes after urethral reconstruction are changing. Currently, the aim of stricture repair is not only to reinstate urinary function but also to safeguard sexual activity and guarantee genital cosmesis.

This and other our studies highlight that most of the patients undergoing urethroplasty are young and they fear much more the risk of sexual dysfunctions than the risk of re-stenosis.<sup>1</sup>

In bulbar reconstructions, grafting techniques seem to impact less on sexual outcome than excision anastomotic techniques.<sup>2</sup> Therefore, the policy of primarily indicating an anastomotic procedure, whenever possible (even for nonobliterative short strictures), should come under scrutiny. Potential sexual outcomes should be incorporated in the choice of the best urethral reconstruction technique and in preoperative patient counseling.

Many anatomic structures are involved in urethral reconstruction and we need to better investigate their involvement in potential postoperative sexual complications.

A thorough evaluation of urethroplasty results should also include the sexual viewpoint, which seems to play an important role in overall postoperative patient satisfaction.

We are entering the new era of urethral reconstruction: the "sexuality-preserving urethroplasty."

This implies that, in the future, it will be necessary to develop "specific" validated questionnaires including not only urinary dysfunctions and morbidity of oral mucosa harvesting but also other specific issues that urethral surgery involves, such as sexual and ejaculatory dysfunctions, changes in esthetic appearance of male genitalia, and so on.

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