Published in final edited form as:

Urology. 2015 August ; 86(2): 395–400. doi:10.1016/j.urology.2015.04.055.

Patient Reported Sexual Function After Staged Penile Urethroplasty

Darshan P Patel, MD¹, Sean P Elliott, MD, MS², Bryan B. Voelzke, MD, MS³, Bradley A Erickson, MD, MS⁴, Christopher D McClung, MD⁵, Angela P Presson, PhD, MS⁶, Chong Zhang, MS⁶, and Jeremy B Myers, MD¹ for the Trauma and Urologic Reconstruction Network of Surgeons (TURNS)

¹The Center for Reconstructive Urology and Men's Health, University of Utah, Salt Lake City, UT

²Department of Urology, University of Minnesota, Minneapolis, MN

³Department of Urology, University of Washington, Seattle, WA

⁴Department of Urology, University of Iowa Carver College of Medicine, Iowa City, IA

⁵Department of Urology, Ohio State University Wexner Medical Center, Columbus, OH

⁶Division of Epidemiology, Department of Internal Medicine, University of Utah, Salt Lake City, UT

Abstract

Objective—To evaluate sexual function after staged penile urethroplasty with oral mucosal graft (OMG).

Methods—We identified men with completed staged penile urethroplasty with OMG from the Trauma and Urologic Reconstruction Network of Surgeons (TURNS) database between 1/1/2010–5/1/2014. Our primary outcome was change in total Sexual Health Inventory for Men (SHIM) and total Male Sexual Health Questionnaire Ejaculatory Short Form (MSHQ-EjD) at baseline vs. after the 2nd stage of the procedure. Secondly, we assessed subjective changes in penile curvature, length, and sensation.

Results—Thirty-three patients were included with a mean age of 45 years and mean BMI of 27.6 kg/m². Urethral strictures arose from failed hypospadias repair in 52% and lichen sclerosus in 27%. Fifty-two percent of patients reported a previous urethroplasty. The median follow-up time

Correspondence Address: Darshan P Patel, MD, Division of Urology, Department of Surgery, University of Utah University of Utah Health Care, 30 N 1900 E, RM 3B420, Salt Lake City, UT 84132, Phone: 801-213-2780, darshan.patel@utah.edu.

Author Contributions: DPP and JBM made substantial contributions to research design, data acquisition, analysis, drafting and revising of the manuscript, and final approval of submission. CZ and APP contributed to data analysis and interpretation. SPE, BBV, BAE, CDM contributed to critically revising and final approval of the submitted manuscript.

Disclosures: All conflicts of interest, including specific financial interests and relationships and affiliations relevant to the subject matter and materials discussed in this manuscript (employment/affiliation, grants or funding, honoraria, stock ownership or options, expert testimony, royalties, or patents filed, received, or pending), are the following: DPP was supported in part by a generous reconstructive urology educational grant from American Medical Systems, Inc., Minnetonka, MN. American Medical Systems, Inc. had no role in study concept, design, data acquisition and analysis, or manuscript drafting and revision.

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between the 2nd stage procedure and post-operative questionnaires was 6.3 months (IQR: 3.5–13.3). There was no significant change in the total SHIM (-0.64 , 95% CI: $-3.00\sim1.72$) and MSHQ-EjD (1.55 , 95% CI: $-1.53\sim4.63$) scores pre-operatively vs. post-operatively. Additionally, 32% reported improved and 52% no change in satisfaction with sexual intercourse (SHIM Q5). Forty percent of patients reported reduced and 45% no change in bother with ejaculation after surgery (MSHQ-EjD Q4). Men reported new penile curvature (23%), loss of penile length (55%) and altered penile sensitivity (45%) after surgery.

Conclusion—Patients undergoing staged penile urethroplasty with OMG are likely to have minimal changes in erectile and ejaculatory function post-operatively, although many may experience new penile curvature, reduced penile length, and/or reduced penile sensitivity.

Keywords

urethra/surgery; urethral stricture/complications; urethral stricture/surgery; erectile dysfunction; hypospadias/surgery; sexual dysfunction; physiological

Introduction

The management of complex penile urethral strictures is challenging. Although there is a role for less invasive procedures such as urethral dilation or urethrotomy, surgical reconstruction offers the most favorable success rates and is associated with reduced long-term costs and morbidity (1–5). Staged substitution urethroplasty with oral mucosal graft (OMG) offers high success rates for penile urethral strictures - as high as 91% up to two years following the procedure (6). Commonly, the first stage involves incision or excision of the stricture and graft placement followed by graft tubularization in the second stage (5). Many reconstructive urologists favor this procedure in patients with complicated penile urethral stricture disease, including those patients with failed hypospadias repair or lichen sclerosus, lengthy strictures, or previous failed urethroplasty (5, 6).

Although surgical success following staged penile urethroplasty with OMG has been well described, little is known about how the surgery affects sexual function. Prior studies on the relationship between urethroplasty and sexual function have focused on bulbar urethral reconstruction and single stage surgical techniques (7–15). Extrapolation of these findings to staged penile urethroplasty may not be appropriate given the unique concerns regarding sexual function associated with procedures involving the penis.

We evaluated erectile, ejaculatory, and sexual outcomes following staged penile urethroplasty with OMG using the Trauma and Urologic Reconstruction Network of Surgeons (TURNS) database. We hypothesize that erectile, ejaculatory, and sexual function, including altered penile curvature, length, and sensitivity, are not significantly affected following staged penile urethral reconstruction.

Methods

Study Population

We identified all adult male patients who had completed the second stage of a planned staged penile urethroplasty with OMG within the TURNS database between 1/1/2010–5/1/2014. TURNS is a multi-centered outcomes research collaborative that prospectively collects outcomes data for urethral reconstructive procedures. All members are fellowship-trained reconstructive urologists at major academic institutions in the United States (16). Institutional board approval was obtained at each respective center. Patients who were not sexually active or had not completed at least one post-operative sexual function questionnaire were excluded.

Surgical Technique

Previously described surgical techniques were used for all patients (17, 18). Patients were placed in a low lithotomy or supine position. During the first stage, a longitudinal incision is made on the ventral aspect of the penis with partial urethrectomy to remove affected urethral segments. The graft is harvested from the inner cheek or lip. Subsequently, the graft is spread and fixed as a dorsal onlay directly onto the tunica albuginea of the corporal bodies.

The second stage is performed 3–12 months after the first stage when the graft has matured. A 2.5–3.0 cm wide plate consisting of graft and lateral penile skin is incised and dissected laterally for tubularization over a urinary catheter as previously described. A layer of tunica dartos or a tunica vaginalis flap is often interposed to help support the graft and prevent fistula formation.

Questionnaire and Data Collection

All patients enrolled in TURNS were asked to complete the five-item Sexual Health Inventory for Men (SHIM) and four-item Male Sexual Health Questionnaire for Ejaculatory Function (MSHQ-EjD) pre-operatively and at subsequent post-operative visits (Table 2) (19, 20). Each item is on a Likert scale and the total score is a sum of the individual items. A third, non-validated post-urethroplasty sexual function questionnaire was also administered to patients postoperatively. This questionnaire was developed using items proposed in prior studies assessing sexual function following urethroplasty (8). These items specifically assessed frequency of sexual activity, penile curvature, medications for ED, penile sensitivity, and surgical satisfaction (Table 2).

Demographic and clinical data including age, body mass index (BMI), smoking status, diabetes status, previous history of urethroplasty, and information regarding the stricture including length, caliber, and etiology was also extracted from the TURNS database.

Statistical Analyses

The primary outcome in this study was the change in sexual function pre-operatively vs. after completion of the second stage penile urethroplasty with OMG, as assessed through change in total SHIM and MSHQ-EjD scores. Our secondary outcome was frequency of new penile curvature, changes in penile length, and changes in penile sensitivity. Clinical

characteristics were summarized as n (%) for categorical variables and mean (+/- standard deviation SD) and median (and interquartile range, IQR) for continuous variables. For SHIM and MSHQ-EjD, we summarized total score difference (post – pre) by the mean and its 95% confidence interval (CI) and tested whether it was equal to zero in a linear regression model controlling for source institution. We also reported the percentage of patients who did worse (– 1 point decrease), stayed the same (no change), or improved (+ 1 point increase) after completion of their second stage and their baseline pre-operatively. In men with multiple post-operative questionnaires, only the most recent questionnaire was considered. Statistical analyses were conducted in R v. 3.03 software (21). All tests were two-tailed.

Results

Study Population

A total of 57 patients underwent staged penile urethroplasty with OMG between 2010–2014 by five TURNS surgeons. We excluded patients with missing post-operative questionnaires (n=19) and/or not sexually active (n=5). A total of 33 patients were included in our analyses.

Demographics

Table 1 provides the clinical characteristics of the study cohort. Mean age was 45 years and mean BMI was 27.6 kg/m². Only 6% of the cohort had diabetes and 12% reported smoking history. The most common etiologies of stricture disease were failed hypospadias repair and lichen sclerosus (52% and 27%, respectively). Fifty-two percent of patients reported a previous urethroplasty. Median follow-up time between completion of the 2nd stage and post-operative questionnaire completion was 6.3 months (IQR: 3.5–13.3). Median follow-up time between the 1st and 2nd stage of the urethroplasty was 6.3 months (IQR: 5.7–12.8).

Erectile Function

The mean and median total SHIM score post-operatively were 20.3 (SD: 5.8) and 23 (IQR: 19, 25), respectively. In the 25 men with completed SHIM surveys pre-operatively and postoperatively, there was no statistically significant difference in scores before and after urethroplasty when controlling for institution (p=0.47). Distribution of the SHIM total score pre-operatively vs. post-operatively is illustrated in Figure 1 where the mean difference was –0.64 (SD: 5.72, 95% CI: –3.00~1.72). Additionally, the percentage of patients who reported worse, same, or better function for each of the 5 SHIM items is shown in Figure 2. For question 5 on the SHIM assessing satisfaction with sexual intercourse, 32% reported improved satisfaction and 52% reported no change in satisfaction.

Ejaculatory Function

The mean and median total MSHQ-EjD score post-operatively were 16.5 (SD: 4.2) and 18 (IQR: 14, 20), respectively. In the 20 men with completed MSHQ-EjD surveys pre-operatively and post-operatively, there was no statistically significant difference in scores before and after penile urethroplasty when controlling for institution (p=0.31). Distribution of the MSHQ-EjD total score pre-operatively vs. post-operatively is illustrated in Figure 1, where the mean difference was 1.55 (SD: 6.57, 95% CI: –1.53~4.63). Additionally, the percentage of patients who reported worse, same, or better function for each of the 4

MSHQ-EjD items is shown in Figure 2. For question 4 on the MSHQ-EjD assessing ejaculatory dysfunction bother, 40% reported reduced bother and 45% reported no change.

Additional Sexual Function Questions

Twenty-two patients completed the post-urethroplasty questionnaire. New penile curvature following urethroplasty was reported in 5 (23%), with 3 (14%) men reporting quite a bit of new curvature and 2 (9%) men reporting somewhat of a change. Two (10%) patients reported quite a bit a loss in penile length and 10 (45%) reported somewhat of a loss. Eight (36%) men reported decreased penile sensitivity, 2 (9%) reported increased sensitivity, and 12 (55%) had no change. Only one patient required erectile dysfunction medications post-operatively. Most patients were satisfied (68%) or neutral (23%) with the outcome of their urethroplasty.

Discussion

Staged penile urethroplasty with OMG offers high success rates for patients with complex penile strictures. However, our knowledge on the sexual outcomes of this procedure is limited. Sexual outcomes are an important concern among patients and clinicians counseling these patients. In this multi-institutional study evaluating sexual function following staged penile urethroplasty with OMG, there was no statistically significant difference in the total SHIM (-0.64 , 95% CI: $-3.00\sim1.72$) and MSHQ-EjD scores (1.55 , 95% CI: $-1.53\sim4.63$) at baseline pre-operatively vs. after completion of the second stage of the procedure at a median follow-up of 6.3 months. Although there was no significant difference in erectile and ejaculatory function following urethroplasty, our non-validated questionnaire revealed a considerable percentage of men with a subjective report of increased penile curvature, decreased length, and altered sensitivity (23%, 55%, 45%, respectively). Unfortunately, the magnitude of these changes was not evaluated in this subjective assessment. These changes may not have been clinically significant to the men given the limited impact on SHIM and MSHQ-EjD scores, but are of concern for sexually active men after urethroplasty.

Prospective evaluation of sexual outcomes following penile urethroplasty is limited. Erickson et al. assessed erectile function after anterior urethroplasty in a heterogeneous cohort including 17 men with penile strictures of which 6 had repair in two stages(10). At their first post-operative visit (median 61 days), there was a significant difference in pre-operative vs. post-operative International Index of Erectile Function (IIEF) score ($p=0.04$), however this relationship was attenuated at their last post-operative visit (median 217 days). Similarly Dogra et al. prospectively evaluated incidence of erectile dysfunction in a subgroup of 25 men who underwent various penile urethroplasty techniques(9). This group found that 16% of patients undergoing penile urethroplasty reported ED after surgery with a mean difference of 2.2 in IIEF score at 3 months post-operatively ($p=0.011$). At 15 months post-operatively, mean IIEF scores returned to the baseline in this cohort. Sharma et al. studied sexual function in using the O'Leary Brief Male Sexual Function Inventory in a subgroup of seven patients who underwent penile urethroplasty for anterior stricture disease(13). These investigators found an improvement in ejaculatory function and overall sexual satisfaction and no change in erectile function at 3 months post-operatively compared

to pre-operatively. DeLong and Buckley presented patient reported outcomes from 110 patients who underwent urethral reconstruction(15). They found a median change of 0 (IQR: -1, 2, $p=0.53$) overall and a mean change of 2 ($p=0.20$) specifically in staged procedures for IIEF.

Only a single previous study has evaluated ejaculatory function following penile urethroplasty. Erickson et al. used the MSHQ-EjD to compare ejaculatory function pre-operatively vs. postoperatively in a sub-group of 13 men who underwent penile urethroplasty(11). Only a single patient underwent two-stage penile urethroplasty with buccal mucosa graft. There was no significant difference in MSHQ-EjD scores pre-op vs. post-op for patients who underwent penile urethroplasty in this group of 13 men ($p=0.80$).

Previous studies have suggested an increased short-term risk of ED immediately post-operatively with recovery as early as 6 months with penile urethroplasty. Penile urethroplasty likely has no impact or even improvement in ejaculatory function due to the removal of urethral obstruction in men with penile urethral strictures. However, these studies have grouped various stricture locations and different urethroplasty techniques in their analyses, which make interpretation of their results difficult.

Our study is one of the first studies to evaluate erectile and ejaculatory function using validated instruments in a multi-center cohort for men undergoing staged penile urethroplasty with OMG. However, there are several limitations to our study. Our final study cohort was affected by a reduced questionnaire completion rate, which may introduce selection bias. In our experience, questionnaire adherence and completion for this study population is particularly difficult given the younger age of the cohort and sensitive nature of their stricture disease as noted previously (22). Additionally, our sample size was small and thus our study was not adequately powered to detect a small difference in total SHIM and MSHQ-EjD scores. To facilitate interpretation of our results in the context of our sample size, we have provided 95% CIs for our mean difference estimates. We were also unable to determine the relationship between surgical success rates and patient satisfaction because of the small cohort size.

We chose to use the SHIM and MSHQ-EjD since they were specifically designed to evaluate erectile function and ejaculatory function, respectively, although validated in a different population. Therefore, these questionnaires likely overlooked more subtle sexual outcomes associated with staged penile urethroplasty including changes in penile curvature, length, and sensitivity that were captured by our non-validated post-urethroplasty questionnaire. A significant percentage of men undergoing urethroplasty may experience these sexual complications and validated instruments with better sensitivity and specificity for these specific complications are needed to help evaluate outcomes. However, the results of the present study are valuable for patient counseling and significantly add to the existing literature regarding sexual outcomes for a specific procedure for complicated penile urethral strictures.

Conclusion

Patients undergoing staged penile urethroplasty with OMG for complex penile stricture disease are likely to have minimal changes in erectile and ejaculatory function post-operatively. A significant percentage of patients may experience a change in penile curvature, length, and/or sensitivity. Future, prospective studies using repeated subjective and objective measures of sexual function and satisfaction will better help elucidate the impact of staged penile urethroplasty on sexual outcomes.

Acknowledgments

Study Funding: This investigation was supported by the University of Utah Study Design and Biostatistics Center, with funding in part from the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant 8UL1TR000105 (formerly UL1RR025764). Funded under National Center for Research Resources, National Institutes of Health, Grant KL2RR025015.

References

1. Greenwell TJ, Castle C, Andrich DE, MacDonald JT, Nicol DL, Mundy AR. Repeat urethrotomy and dilation for the treatment of urethral stricture are neither clinically effective nor cost-effective. *The Journal of urology*. 2004; 172(1):275–7. [PubMed: 15201793]
2. Rourke KF, Jordan GH. Primary urethral reconstruction: the cost minimized approach to the bulbous urethral stricture. *The Journal of urology*. 2005; 173(4):1206–10. [PubMed: 15758749]
3. Wright JL, Wessells H, Nathens AB, Hollingworth W. What is the most cost-effective treatment for 1 to 2-cm bulbar urethral strictures: societal approach using decision analysis. *Urology*. 2006; 67(5): 889–93. [PubMed: 16698347]
4. Heyns CF, Steenkamp JW, De Kock ML, Whitaker P. Treatment of male urethral strictures: is repeated dilation or internal urethrotomy useful? *The Journal of urology*. 1998; 160(2):356–8. [PubMed: 9679876]
5. Chapple C, Andrich D, Atala A, Barbagli G, Cavalcanti A, Kulkarni S, et al. SIU/ICUD Consultation on Urethral Strictures: The management of anterior urethral stricture disease using substitution urethroplasty. *Urology*. 2014; 83(3 Suppl):S31–47. [PubMed: 24411214]
6. Mangera A, Patterson JM, Chapple CR. A systematic review of graft augmentation urethroplasty techniques for the treatment of anterior urethral strictures. *European urology*. 2011; 59(5):797–814. [PubMed: 21353379]
7. Mundy AR. Results and complications of urethroplasty and its future. *British journal of urology*. 1993; 71(3):322–5. [PubMed: 8477319]
8. Coursey JW, Morey AF, McAninch JW, Summerton DJ, Secrest C, White P, et al. Erectile function after anterior urethroplasty. *The Journal of urology*. 2001; 166(6):2273–6. [PubMed: 11696750]
9. Dogra PN, Saini AK, Seth A. Erectile dysfunction after anterior urethroplasty: a prospective analysis of incidence and probability of recovery--single-center experience. *Urology*. 2011; 78(1): 78–81. [PubMed: 21550645]
10. Erickson BA, Granieri MA, Meeks JJ, Cashy JP, Gonzalez CM. Prospective analysis of erectile dysfunction after anterior urethroplasty: incidence and recovery of function. *The Journal of urology*. 2010; 183(2):657–61. [PubMed: 20018319]
11. Erickson BA, Granieri MA, Meeks JJ, McVary KT, Gonzalez CM. Prospective analysis of ejaculatory function after anterior urethral reconstruction. *The Journal of urology*. 2010; 184(1): 238–42. [PubMed: 20483147]
12. Erickson BA, Wysock JS, McVary KT, Gonzalez CM. Erectile function, sexual drive, and ejaculatory function after reconstructive surgery for anterior urethral stricture disease. *BJU international*. 2007; 99(3):607–11. [PubMed: 17155967]

13. Sharma V, Kumar S, Mandal AK, Singh SK. A study on sexual function of men with anterior urethral stricture before and after treatment. *Urologia internationalis*. 2011; 87(3):341–5. [PubMed: 21952068]
14. Blaschko SD, Sanford MT, Cinman NM, McAninch JW, Breyer BN. De novo erectile dysfunction after anterior urethroplasty: a systematic review and meta-analysis. *BJU international*. 2013; 112(5):655–63. [PubMed: 23924424]
15. DeLong J, Buckley J. Patient-reported outcomes combined with objective data to evaluate outcomes after urethral reconstruction. *Urology*. 2013; 81(2):432–6. [PubMed: 23374824]
16. Erickson BA, Voelzke BB, Myers JB, Brant WO, Broghammer JA, Smith TG 3rd, et al. Practice patterns of recently fellowship-trained reconstructive urologists. *Urology*. 2012; 80(4):934–7. [PubMed: 22901817]
17. Riechardt S, Fisch M. Two-stage urethroplasty with buccal mucosa. *BJU international*. 2012; 109(1):150–62. [PubMed: 22151751]
18. Patterson JM, Chapple CR. Surgical techniques in substitution urethroplasty using buccal mucosa for the treatment of anterior urethral strictures. *European urology*. 2008; 53(6):1162–71. [PubMed: 18609764]
19. Rosen RC, Catania JA, Althof SE, Pollack LM, O’Leary M, Seftel AD, et al. Development and validation of four-item version of Male Sexual Health Questionnaire to assess ejaculatory dysfunction. *Urology*. 2007; 69(5):805–9. [PubMed: 17482908]
20. Rosen RC, Cappelleri JC, Smith MD, Lipsky J, Pena BM. Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *International journal of impotence research*. 1999; 11(6):319–26. [PubMed: 10637462]
21. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing; Vienna, Austria: 2014. <http://www.R-project.org/>
22. Erickson BA, Elliott SP, Voelzke BB, Myers JB, Broghammer JA, Smith TG 3rd, et al. Multi-institutional 1-year bulbar urethroplasty outcomes using a standardized prospective cystoscopic follow-up protocol. *Urology*. 2014; 84(1):213–6. [PubMed: 24837453]

Figure 1. Distribution of Total Sexual Health Inventory for Men (SHIM) and Male Sexual Health Questionnaire Ejaculatory Domain (MSHQ-EjD)

Pre: Pre-operatively at baseline; Post: Post-operatively after 2nd stage completion; Post-Pre: Mean difference post-operatively after 2nd stage completion versus pre-operatively at baseline.

Figure 2. Percentage of Patients with Worse, Same, or Better Function for each Item on the Sexual Health Inventory for Men (SHIM) and Male Sexual Health Questionnaire Ejaculatory Domain (MSHQ-EjD) after 2nd Stage of Penile Urethroplasty

* From a regression model testing that the score difference is zero while controlling for time and institution.

Table 1

Clinical Characteristics of Men Undergoing Staged Penile Substitution Urethroplasty with Oral Mucosal Graft (n=33)

	Mean (+SD)	Median (IQR)
Age (yrs)	45 (13)	47 (38, 53)
BMI (kg/m ²)	27.6 (7.9)	27.1 (23.3, 33.4)
Stricture Length (cm)	4.7 (3.5)	4.0 (1.5,7.0)
Stricture Calibre (Fr)	7.2 (3.7)	6.0 (5.0,10.0)
Graft Length (cm)	5.4 (2.4)	5.0 (4.0,7.0)
	n	%
Diabetes (yes)	2	6%
Smoking (yes/former)	4	12%
Previous Urethroplasty (yes)	17	52%
Etiologies:		
Failed Hypospadias Repair	17	52%
Lichen Sclerosus	9	27%
Other etiology:	7	21%

Table 2

Item Summary for Post-Urethroplasty Questionnaire, Sexual Health Inventory for Men and Male Sexual Health Questionnaire Ejaculatory Short Form

Post Urethroplasty Questionnaire:

Sexual Function:

1. Were you sexually active before the operation (including masturbation)?	Yes ; No
2. Have you been sexually active since the operation (including masturbation)?	Yes ; No
3. Have you altered the frequency of your sexual intercourse since surgery because of changes in erectile function?	Yes ; No
4. Have you noted a curvature of your penis during erections that is new since surgery?	Not at all ; Somewhat ; Quite a bit
5. Has the length of your penis changed since surgery?	Not at all ; Somewhat ; Quite a bit
6. Has your partner noticed a change in your erectile function since surgery?	Yes ; No ; N/A – No partner
7. Were you on medications for erectile dysfunction before surgery (for example: Viagra, Cialis, Levitra)?	Yes ; No
8. Have you required medications for erectile dysfunction since your surgery?	Yes ; No

Miscellaneous:

1. Does the glans (tip) of your penis swell during an erection?	Yes ; No
2. Did you have a change in penile sensitivity after surgery?	Increased sensitivity ; decreased sensitivity ; no change
3. Since surgery, have you ever experienced a cold glands (tip) during an erection?	Yes ; No ; N/A - No erections
4. Have you noticed changes in your ejaculation since surgery?	Worse ejaculation ; Improved ejaculation ; No change
5. Were you satisfied with your surgical procedure?	Satisfied ; Neither satisfied or unsatisfied ; unsatisfied
6. Would you repeat the surgery?	Yes ; No ; Maybe

Sexual Health Inventory for Men (SHIM):

Q1: Confidence in Maintaining Erection

Q2: Erection Sufficient for Penetration

Q3: Maintain Erection after Penetration

Q4: Maintain Erection for Duration of Intercourse

Q5: Sexual Intercourse Satisfaction

Male Sexual Health Questionnaire Ejaculatory Short Form (MSHQ-EJD):

Q1: Ejaculation Frequency

Q2: Strength of Ejaculation

Q3: Volume of Ejaculate

Q4: Ejaculatory Dysfunction Bother