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Recreational urethral sounding is associated with high risk sexual behaviour and sexually transmitted infections

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Study Type – Symptom prevalence (case series)
Level of Evidence 4

What's known on the subject? and What does the study add?

Most of the medical literature regarding recreational urethral sounding pertains to foreign body retrieval. Very little is known about men who perform sounding and do not require medical attention.

Of >2000 men, who responded to a urinary and sexual wellness survey, 10% had a history of recreational urethral sounding. Compared with men who did not sound, men who did reported higher risk sexual behaviours such as multiple sexual partners, sex with strangers and reported more sexually transmitted infections. Men who seek medical attention for complications resulting from sounding should be counselled regarding the hazards of the practice. Realistic strategies for risk reduction should be discussed with men who engage in recreational sounding.

OBJECTIVE

- To determine whether men who perform recreational sounding are at increased risk of engaging in unsafe sexual behaviours, developing sexually transmitted infections (STIs) and lower urinary tract symptoms (LUTS).

SUBJECTS AND METHODS

- In a cross-sectional, international, internet-based survey of the sexual practices of >2000 men who have sex with men, subjects were asked if they had engaged in urethral sounding for sexual gratification.
- We compared ethnodemographic and health-related variables between the sounding and non-sounding populations. The International Prostate Symptom Score and a modified validated version of the International Index of Erectile Function

were used to quantify LUTS and erectile dysfunction (ED) in both populations.

RESULTS

- There were 2122 respondents with complete data, 228 (10.7%) of whom had engaged in recreational sounding.
- Men who had engaged in sounding were more likely to report certain high risk sexual behaviours (e.g. multiple sexual partners and sex with partners who were not well known) and had increased odds of reporting STIs.

- Men who had engaged in sounding had a slight but statistically significant increase in LUTS but no significant difference in prevalence of ED.

CONCLUSIONS

- Urethral sounding is a sexual practice that is associated with higher risk sexual behaviour and carries the potential for morbidity.
- Research on means for risk reduction for men who choose to engage in recreational sounding requires further study.

INTRODUCTION

Satisfying sexual function is an important quality-of-life issue and a human right [1]. There is tremendous diversity in human sexual expression [2–4]. Sexual activities that may be erotic to one individual may be abhorrent to another; therefore, an individualized approach to assessment and treatment of sexual problems, tailored to the patient's unique circumstances, is required for the provision of effective sexual health services.

Urethral sounding is the insertion of an object or liquid into the urethra. Sounding may be used in urological surgery for dilatation of strictures or for obtaining access to the bladder. Urethral sounding is also performed outside the scope of medical practice by individuals for a variety of reasons. Insertion of objects into the urethra has been associated with accidents as well as a variety of psychological illnesses [5], but the most common reason reported in the medical literature for deliberate urethral insertion is erotic gratification [5,6]. A recent

Google™ search of the phrase 'urethral sounding' produced over 550 000 results, many of them pertaining to recreational sounding and complete with instructions and diagrams on the procedure.

Whereas sounding for medical treatment typically involves the use of sterile metal or plastic dilators, a variety of objects and liquids may be used for the purpose of recreational sounding. Given the variability in the technique and type of devices used, recreational sounding carries substantial risk

of loss of foreign body, UTI, urethral stricture and healthcare expenditures [5]. Some patients may repeatedly self-injure themselves with foreign bodies to derive gratification from repeated healthcare encounters, much to the frustration and inconvenience of their providers.

The majority of the medical literature on urethral sounding is based on case reports of individuals who experienced harm from this practice [5]. Relatively little is known about the prevalence of sounding in the general population and whether it is associated with additional health risks beyond those that would prompt immediate medical consultation (e.g. loss of foreign body or infection). A better understanding of risk-taking behaviours that may be more prevalent in people who engage in recreational sounding would be valuable for the practitioner who treats these patients.

We recently completed a cross-sectional internet-based survey of urinary and sexual wellness of over 2000 men who have sex with men (MSM). As part of our survey of sexual practices, men were asked if they performed urethral sounding for sexual gratification. Our objective was to compare MSM who have engaged in sounding with those who have not to determine if this practice is associated with a greater prevalence of high risk sexual behaviours and/or urological symptoms. We hypothesized that men who perform urethral sounding would have a higher prevalence of sexually transmitted infections (STIs), UTIs, and LUTS.

SUBJECTS AND METHODS

STUDY DESIGN AND COHORT DESCRIPTION

Institutional Review Board approval was obtained before initiating the study. We performed a cross-sectional, internet-based survey of urinary and sexual wellness and quality-of-life outcomes in MSM. The cohort was restricted to English-literate, internet-using MSM who were at least 18 years of age. International sampling was achieved by distribution of a survey invitation to local, national and international Lesbian, Gay, Bisexual and Transgender community centres, organizations catering to MSM, and advertisements on Facebook® (<http://www.facebook.com>, Palo Alto, CA, USA) aimed at

self-identified MSM. Potential subjects were given the option of clicking on a link to the survey which was posted on the internet-based survey site Survey Monkey® (<http://www.surveymonkey.com>, Palo Alto, CA, USA). Respondents were informed that they would be asked questions regarding their sexual and urinary wellness and given the option to decline participation or stop the survey at any time. To maintain privacy, no personally identifying information was collected. Responses were collected between 19 January 2010 and 19 May 2010.

PRIMARY OUTCOME VARIABLES

Patients were given a radio button list of sexual activities and asked 'Which of the following sexual activities have you engaged in?' One of the listed activities was 'Sounding (putting things in your penis and/or pee channel)'. Subjects who reported that they had engaged in urethral sounding were the sounding group and subjects who answered no to this question were the non-sounding group.

URINARY TRACT SYMPTOMS

To measure urinary function we used the IPSS, an internationally validated metric of bothersome LUTS [7,8]. IPSS is graded on a scale of 0–35 and based on response to seven Likert-style questions on urinary symptoms including frequency, urgency, nocturia, intermittency, weak stream, straining and incomplete emptying. Validated categorical severity scales exist that divide LUTS into none/mild (IPSS 0–7), moderate (8–19) or severe (20–35) [7]. Respondents were asked whether they took medication to help urination (yes/no) or if they had sought medical attention from a healthcare provider for urinary complaints (yes/no).

SEXUAL FUNCTION

A modified version of the International Index of Erectile Function (IIEF), validated for use in HIV-positive MSM, was used to assess sexual function [9]. Both the standard and the modified IIEF assess five domains of male sexual function, including desire, erectile function, orgasm, intercourse satisfaction and overall satisfaction [9,10]. Validated threshold scores for the erectile function domain (IIEF-EF) have been developed to stratify erectile dysfunction

(ED) severity in the unmodified IIEF; we are unaware of any such threshold for the modified IIEF designed for MSM [9]. For the purpose of analysis, we classified a score of ≤ 15 points out of a possible 30 on the IIEF-EF as evidence of moderate to severe ED. This criterion was used by Coyne *et al.* [9] in their initial study.

Respondents were also asked whether they had taken a phosphodiesterase-5 (PDE5) inhibitor to improve sexual performance (yes/no) or if they had sought medical attention from a healthcare provider to address sexual complaints (yes/no).

INFECTION HISTORY

Respondents were asked if they had ever had HIV, chlamydia, gonorrhoea, syphilis, genital herpes, and/or genital warts (yes/no). We also inquired whether the respondent had ever had a UTI that required antibiotic treatment (excluding sexually transmitted diseases) (yes/no) or if they had been diagnosed with prostatitis or chronic pelvic pain (yes/no).

DEMOGRAPHICS AND COMORBID DISEASE

Respondents reported their age, geographical location, size of city and race/ethnicity (African-American, Asian-American, Caucasian, Latin-American, Native American, Other). Respondents were asked if they had ever been diagnosed or treated for the following medical conditions: diabetes, coronary artery disease, hyperlipidaemia, high blood pressure or depression (yes/no).

SEXUAL RISK-TAKING BEHAVIOURS

Respondents were asked to report their number of lifetime sexual partners. For ease of reporting these were grouped by quartiles. Subjects were also asked to report the number of sexual partners they had had in the last 6 months; these responses were grouped as 0, 1, 2–5 and ≥ 6 . Respondents were asked if they had a regular current sexual partner (yes/no) or if they had sex with men they did not know well (yes/no).

Usage of condoms during anal insertive and receptive intercourse was assessed by two separate questions asking, 'How often do you use condoms for anal insertive/receptive sex?' Respondents could answer 1) 'I don't insert my penis in my partner's anus [or I

don't receive anal sex] 2) 'always (100%)', 3) 'most of the time (75%)', 4) 'sometimes (50%)', 5) 'rarely (25%)', or 6) 'never (0%)'

Respondents were asked if they used the following recreational drugs: methamphetamine, cocaine, ketamine, ecstasy and prescription pills. For each drug, participants were asked, 'How often do you use drugs to get high?' (never, rarely/about once per year, sometimes/several times a year, monthly, weekly, or daily). For ease of interpretation, the variable was made binary by grouping several times a year, monthly and daily as a positive response to drug use and never, and rarely/about once per year as a negative response.

STATISTICAL ANALYSIS

Descriptive statistics were used to characterize the study population. A Student's *t*-test was used to compare means of groups and a chi-squared test was used to compare multiple categories. A multiple logistic regression model for odds of developing a lifetime STI or UTI were developed with predictor variables selected *a priori*. A lifetime STI or UTI was defined as a self-reported history of any of the following conditions: HIV, gonorrhoea, chlamydia, genital herpes, genital warts, syphilis, a non-sexually transmitted UTI or prostatitis. *A priori* predictors included sounding, age in 10-year increments, lifetime partner count, sex with strangers and methamphetamine use. A *P* value of <0.05 was considered to indicate statistical significance and all tests were two-sided. STATA 11 (Statacorp, College Station, TX, USA) was used for all analyses.

RESULTS

The survey website was accessed by 2783 men, of whom 2122 (76.2) completed questions related to this analysis. A total of 228 (10.7%) subjects reported a history of recreational sounding. Patient demographics and comorbidity data are presented in Table 1. The median age of men in the sounding group was 43 (interquartile range 35–50.5; range 18–70) compared with 39 (interquartile range 30–47; range 18–70) in the non-sounding group. The sounding group was significantly older (*P* < 0.001). The majority of the population were from

TABLE 1 Demographic and comorbidity information stratified by history of sounding

	History of urethral sounding		No history of urethral sounding		<i>P</i>
	<i>n</i>	%	<i>n</i>	%	
Age, years					
18–29	18	7.9	391	20.6	<0.001
30–39	69	30.3	605	31.9	
40–49	76	33.3	578	30.5	
50–59	48	21.1	218	11.5	
60+	17	7.5	102	5.4	
Geographic location	<i>n</i>	%	<i>n</i>	%	
Western USA	50	22.2	333	17.7	0.279
Midwest USA	28	12.4	288	15.3	
Northeast USA	37	16.4	318	16.9	
Southern USA	26	11.6	284	15.0	
Southwest USA	17	7.6	117	6.2	
Northwest USA	12	5.3	63	3.3	
Canada	16	7.1	117	6.2	
Europe	28	12.4	222	11.8	
Australia	8	3.6	121	6.4	
Other*	3	1.3	24	1.3	
City population					
<100 000	78	34.4	592	31.4	0.148
100 000–1 000 000	90	39.6	682	36.2	
>1 000 000	59	26.0	610	32.4	
Race					
African	3	1.3	57	3.0	0.145
Asian	3	1.3	58	3.1	0.136
Caucasian	201	88.2	1579	83.4	0.063
Hispanic	8	3.5	130	6.9	0.052
Native American	3	1.3	27	1.4	0.894
Comorbid medical conditions					
Diabetes	16	7.0	135	7.1	0.951
Coronary artery disease	9	4.0	103	5.4	0.342
Hyperlipidaemia	54	23.7	351	18.5	0.061
High blood pressure	56	24.6	448	23.7	0.761
Depression	96	42.1	751	39.7	0.475

*Asia, Africa, South America, Central America. Some totals differ secondary to missing data points.

North America. There were no significant ethnodemographic differences in the sounding and non-sounding groups, although the differences in sounding prevalence approached significance in both Caucasian (higher prevalence of sounding) and Hispanic men (lower prevalence of sounding).

The sexual risk-taking behaviours are shown in Table 2. Men in the sounding group were more likely to have had a high number of lifetime sexual partners as well as a greater number of sexual partners within the last

6 months. Men in the sounding group were significantly more likely to report sex with men they did not know well, sadomasochistic activities and anal fisting (insertion of a hand into the rectum). Although the rate of illicit drug use was low in both groups, a significantly greater proportion of the sounding group had used methamphetamine or ketamine more than once in the past year. There was no significant difference in the proportion of men who had a regular partner, nor was there a difference in the rate of condom usage between the groups.

TABLE 2 Sexual practices stratified by history of urethral sounding

	History of urethral sounding		No history of urethral sounding		P
	n	%	n	%	
Lifetime sexual partners					
0–6	45	20.1	501	27.2	0.001
7–29	41	18.3	458	24.9	
30–100	63	28.1	461	25.0	
>100	75	33.5	422	22.9	
Sexual partners in the last 6 months					
0	23	11.1	214	12.0	0.115
1	64	30.9	629	35.3	
2–5	63	30.4	576	32.3	
≥6	57	27.5	362	20.3	
Have a current regular partner	121	53.3	957	51.3	0.571
Sex with partners who are not well known	148	65.8	1039	55.6	0.004
How often does your partner wear condoms when he inserts his penis in your anus?					
I don't receive anal sex	33	14.7	331	18.1	0.211
Always (100%)	58	25.9	547	29.9	
Most of the time (75%)	23	10.3	196	10.7	
Sometimes (50%)	21	9.4	128	7.0	
Rarely (25%)	25	11.2	142	7.8	
Never (0%)	64	28.6	483	26.4	
How often do you wear condoms when you insert your penis in your partner's anus?					
I don't receive anal sex	38	17.0	282	15.4	0.344
Always (100%)	49	21.9	526	28.8	
Most of the time (75%)	27	12.1	224	12.3	
Sometimes (50%)	18	8.0	129	7.1	
Rarely (25%)	20	8.9	168	9.2	
Never (0%)	72	32.1	500	27.3	
Anal receptive fisting	70	32.7	118	6.3	<0.001
Anal insertive fisting	97	44.5	299	15.9	<0.001
Sex with >1 partner	177	79.4	1117	59.3	<0.001
Been restrained for sexual pleasure	127	58.8	487	25.9	<0.001
Restrained another for sexual pleasure	112	53.1	476	25.2	<0.001
Received pain for sexual pleasure (masochism)	99	45.4	227	12.1	<0.001
Inflicted pain for sexual pleasure (sadism)	81	38.2	233	12.4	<0.001
Drug use >1 time per year					
Methamphetamine	20	9.4	76	4.4	0.001
Cocaine	12	5.6	100	5.8	0.931
Ketamine	9	4.2	26	1.5	0.005
MDMA (Ecstasy)	14	6.5	91	5.2	0.427
Recreational prescription pills	18	8.4	186	10.7	0.297

Some totals differ secondary to missing data points.

Data on sexually and non-sexually transmitted UTIs is shown in Table 3. Men in the sounding group were significantly more likely to report an STI as well as UTIs (Table 3). There was no significant difference in the rate of prostatitis/chronic pelvic pain between groups.

Validated survey outcomes of urinary and sexual health are shown in Table 3. Mean IPSS was slightly but significantly higher in men from the sounding group (7.3 [6.2] vs 6.5 [5.9], $P = 0.03$); however there was no significant difference in the use of medications for voiding function or

help-seeking behaviours regarding urination. The rate of moderate/severe ED (IIEF <15) was not significantly different between the groups. Interestingly, while the sounding group was more likely to have used PDE5 inhibitors to facilitate erection, the non-sounding group was more likely to have sought medical help for sexual problems.

In the multivariate logistic regression analysis (Table 4), reporting a history of sounding increased the odds of having a history of either an STI or UTI/prostatitis by 70%. Increasing age, a greater number of lifetime partners, sex with strangers and methamphetamine use were also predictors of either an STI/UTI or prostatitis.

High risk sexual behaviours were more prevalent in the group of men who had engaged in sounding; as might be expected, this population was also more likely to report STIs and non sexually-transmitted UTIs. While there was no significant difference in the rate of ED between groups, the use of erectogenic medication was more frequent in the sounding group.

DISCUSSION

Dramatic or severe sounding-related injuries are likely to prompt presentation to a healthcare entity and it is from these episodes that much of the biomedical literature on this topic is derived [5]. There has been scant formalized research into health among practitioners of urethral sounding. It is not illogical to hypothesize that many recreational sounding episodes do not result in immediate or even prompt presentation to a healthcare entity; however, whether the practice of sounding predisposes an individual to greater long-term morbidity is unclear.

In the present study, urethral sounding was associated with small increase in LUTS as well as UTIs. Practitioners of sounding were also more likely to have engaged in a number of higher risk sexual behaviours. In addition, in a multivariate logistic regression model, sounding was predictive of infectious events.

A recent internet-based study by Rinard *et al.* [6] investigated urethral insertion

activities in a population of men with genital piercings. In 445 men with genital piercings, 354 answered questions pertaining to insertion of objects into the penis or the urethra, with 85 (24%) answering in the affirmative. The 85 men in this subset were mostly Caucasian, monogamous, heterosexual, college educated, and had annual income of US\$45 000–75 000. Of this population, 11 had inserted liquids retrograde into their urethras and 62 had inserted solid objects into their urethras. Thirty-three men had used actual urethral sounds, while a variety of other household objects accounted for the remainder of items inserted. The majority of these men reported few or only minor complications. The rate of STIs in this subset was relatively low at 4% and self-reported UTI and urethral irritation were reported by five and four patients, respectively. It is likely that there is a substantial overlap in the population of men with genital piercings and the population that engages in urethral sounding but this cohort may not be entirely representative of men who engage in sounding.

The data from Rinard *et al's* study differs somewhat from ours; this may be attributable to differences in the nature of the survey as well as differences in the subject population. While it is impossible to determine from these data if sounding is the direct cause of increased urological morbidity in this dataset, it is clear that men who engage in sounding are more likely to engage in risky behaviours.

While the safest approach in patient management would be to recommend avoiding sounding altogether, this may not be acceptable to or followed by men who find intense gratification from this practice. Education on safer sex practices including means/methods to reduce the risks associated with urethral sounding should be a priority for healthcare providers who encounter patients with sounding-related complications. In such circumstances, education on risk reduction, e.g. use of smooth devices with flared bases to prevent abrasion or object loss, and proper sterilization/cleaning techniques will probably yield safer practices [6]. This approach maximizes respect for individuals and is likely to lead to greater treatment adherence. This is similar in concept to recommending abstinence or monogamy as

TABLE 3 History of STI, non-sexually transmitted UTIs, prostatitis, urinary and sexual outcomes stratified by history of urethral sounding

	History of urethral sounding		No history of urethral sounding		P
	n	%	n	%	
Infection history					
HIV	50	21.9	253	13.4	<0.001
Chlamydia	45	19.7	213	11.3	<0.001
Gonorrhoea	67	29.4	329	17.4	<0.001
Syphilis	30	13.2	167	8.8	0.033
Genital herpes	29	12.7	144	7.6	0.008
Genital warts	58	25.4	309	16.3	0.001
UTI	65	28.5	412	21.9	0.023
Prostatitis/Chronic prostate pain	18	7.9	133	7.1	0.628
Urinary and sexual outcomes					
Categorized IPSS					
None-mild (0–7)	133	62.4	1209	67.1	
Moderate (8–19)	65	30.5	520	28.9	
Severe (20–35)	15	7	73	4.1	0.095
Take medications to help urination?	11	4.8	67	3.5	0.329
Has sought help from a physician for urinary complaints	49	21.5	325	17.2	0.111
IIEF-EF >15	13	7.4	91	6.2	0.543
Use of PDE5 inhibitors	104	45.6	482	25.5	<0.001
Has sought help from a physician for sexual complaints	155	69.8	1473	82.2	<0.001

Some totals differ secondary to missing data points.

TABLE 4 Multivariate logistic regression of predictors for a positive lifetime history of an infectious urological event*

	Odds ratio	P	95% CI
Sounding	1.73	0.002	1.23, 2.42
Age in 10-year increments	1.47	<0.001	1.34, 1.61
Lifetime sexual partners			
0–6	1	–	–
7–29	0.97	0.84	0.75, 1.27
30–100	2.15	<0.001	1.64, 2.82
>100	3.23	<0.001	2.37, 4.39
Sex with men not well known	1.31	0.01	1.07, 1.62
Methamphetamine use	1.93	0.015	1.34, 3.29

**History of HIV, gonorrhoea, chlamydia, syphilis, genital herpes, genital warts, non-sexually transmitted UTI or prostatitis.*

the safest sexual practice but suggesting condoms as a risk-reducing alternative for patients who are not abstinent or monogamous [11].

Some have advocated obtaining a mental health referral for patients who present with a urethral foreign body [12]. Interestingly, similar prevalence of depression was seen in

both groups from our study. With drug usage more common in the sounding group, screening for drug abuse and subsequent referral for substance abuse treatment could benefit those who seek medical attention for a sounding-related issue. In the end, clinical judgment must be used to determine if such referral services are required; it is clear that well-adjusted men without significant mental illness may engage in sounding and the practice is not *de facto* evidence of psychopathology.

Several important limitations of the present study should be mentioned. First, the cross-sectional nature of the dataset makes causal inferences problematic. The frequency, nature and context of urethral insertion history was not fully characterized. In addition, non-response bias and volunteer bias may diminish the applicability of our results to the general MSM population. In particular, MSM who do not read or use computers or cannot read English are under-represented. Men who do not have sex with men were excluded from this study and therefore these findings may not generalize to the broader population. Internet-based surveys are also susceptible to the false reporting of data [13].

In conclusion, urethral sounding for sexual gratification is or has been used by a small but significant minority of the MSM population. This activity may be associated with greater risk of infectious morbidity. Education on safer sex practices (including safer sounding) may have a positive influence on patient well-being.

CONFLICT OF INTEREST

None declared.

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Abbreviations: STI, sexually transmitted infection; MSM, men who have sex with men; IIEF, International Index of Erectile Function; IIEF-EF, erectile function domain of the IIEF; ED, erectile dysfunction; PDE5, phosphodiesterase-5.