

Urinary incontinence during sexual intercourse: a common, but rarely volunteered, symptom

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Summary. A total of 400 women referred consecutively to a gynaecological urology clinic was questioned with regard to their sexual activity and were subsequently investigated by cystometry to establish the prevalence of urinary incontinence occurring during intercourse, and to define the urodynamic background of sufferers. Of the 400 women 324 were sexually active, and of these 79 (24%) experienced incontinence during intercourse; in two thirds of sufferers incontinence occurred on penetration, whereas in the remaining one third urine leakage was restricted to orgasm. Of the former group 70% were shown to have genuine stress incontinence and 4% detrusor instability; of the latter, 42% had genuine stress incontinence and 35% detrusor instability. A comparison of cystometric variables in these two index groups and matched controls failed to identify any specific abnormality of bladder function associated with these symptoms.

Sexual dysfunction is frequently present in women with urinary symptoms, the association arising by several mechanisms. First, the urinary symptoms or the reaction of one or other partner to the symptoms may be the direct cause of sexual difficulties, where none previously existed. Second, they may be the apparent cause of a sexual problem, one or other partner either consciously or subconsciously using the urinary symptoms as a means of avoiding sexual contact where there is a pre-existing but unacknowledged sexual problem. Third, urinary complaints may be the presenting symptom of underlying sexual conflict, and may be used as a mechanism for bringing that conflict to the fore (Stanley & Ramage 1984). Sutherst & Brown

(1979) found that 43% of incontinent women attending the urodynamic clinic claimed that their urinary problems had adversely affected their sexual relations. There are several reasons for this increase in sexual dysfunction in incontinent patients, such as dyspareunia resulting from urinary dermatitis and from previous incontinence surgery, decreased libido, depression, or simple embarrassment. Urinary incontinence occurring during intercourse is another likely contributory factor, although the complaint is infrequently volunteered, and has not been specifically investigated previously. An attempt has been made to assess the prevalence of this symptom in an incontinent population, and to define the urodynamic background of sufferers.

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Patients and methods

The study included 400 women referred consecutively to a gynaecological urology clinic. They were assessed by a standardized questionnaire administered by the physician. They were asked about their sexual activity, and in particu-

lar about any experience of urinary incontinence occurring during intercourse. Those who had noted this symptom were asked whether leakage of urine was associated with arousal, with penetration of the vagina, or specifically with orgasm. Patients were subsequently investigated as indicated by their presenting urinary complaints but all had subtracted dual channel cystometry or videocystourethrography. The relation between the symptoms of incontinence on penetration and on orgasm and the subsequent urodynamic diagnosis was investigated.

A control group was sought for the patients with the symptom of incontinence during intercourse by selecting the next patient referred who matched for age (to within 3 years), and urodynamic diagnosis, who was sexually active, but who did not experience any urinary leakage during intercourse. Cystometric variables were compared between the two symptomatic groups and their respective controls in an effort to identify specific features contributing to the development of this particular symptom, and its timing in relation to sexual activity.

Methods, definitions, and units conform to the standards proposed by the International Continence Society, except where specifically noted (Bates *et al.* 1976, 1977, 1980, 1981).

Results

Of the 400 patients, 324 were sexually active; only two women volunteered the specific complaint of incontinence during intercourse, although on direct questioning a further 77 (24%) had actually experienced the symptom.

Of these, 53 women noted incontinence on penetration, and 26 only on orgasm; none related their incontinence purely to arousal or resolution. Thus four initial study groups were identified: 53 who were incontinent on penetration (group 1); 26 who experienced incontinence during orgasm (group 2); 245 who were sexually active but had never experienced urinary incontinence during intercourse (group 3); and 76 women who were not sexually active (group 4). Several women were not having intercourse as a direct result of previous experiences of incontinence during intercourse; these are classified in groups 1 or 2 as appropriate, rather than group 4.

The distribution of urodynamic diagnoses in the four groups is shown in Table 1. Using a χ^2 test on the major diagnostic categories (a, b, c, d, and i) the distributions of diagnoses between those women experiencing incontinence during intercourse (groups 1 and 2) and those without such problems (groups 3 and 4) are significantly different ($P < 0.02$); similarly the distribution of diagnoses between those with incontinence on penetration (group 1) was significantly different from that seen in women with incontinence on orgasm (group 2) ($P < 0.02$).

Of the 209 patients shown to have genuine stress incontinence, 48 experienced incontinence during intercourse, 37 (18%) occurring on penetration and 11 (5%) occurring on orgasm. Of the 57 women with detrusor instability, 11 had noted urinary leakage during intercourse in two (3%) of whom it had occurred on penetration and in nine (16%) on orgasm. These symptom distributions were significantly different at

Table 1. Distribution of urodynamic diagnoses in patients with and without the symptoms of urinary incontinence during intercourse

Urodynamic diagnosis		Incontinence on penetration (group 1) (n=53)	Incontinence on orgasm (group 2) (n=26)	No incontinence on intercourse (group 3) (n=245)	Not sexually active (group 4) (n=76)
(a)	Genuine stress incontinence	37 (70%)	11 (42%)	121 (49%)	40 (53%)
(b)	Detrusor instability	2 (4%)	9 (34%)	33 (13%)	13 (17%)
(c)	Genuine stress incontinence plus detrusor instability	5 (9%)	2 (8%)	12 (5%)	3 (4%)
(d)	Voiding dysfunction	4 (7%)	1 (4%)	19 (8%)	4 (5%)
(e)	Impaired bladder compliance	0	0	2 (1%)	1 (1%)
(f)	Hypersensitive bladder	1 (2%)	0	9 (4%)	2 (3%)
(g)	Vesico-vaginal fistula	1 (2%)	0	1	0
(h)	Urethral diverticulum	0	1 (4%)	0	0
(i)	No abnormality detected	3 (6%)	2 (8%)	48 (20%)	13 (17%)

the 5% level using the χ^2 test, and were both significantly different from the distribution seen in the 66 women in whom no urodynamic diagnosis was established. Of the latter only five had experienced leakage on intercourse, three on penetration and two on orgasm.

Controls, matched within the criteria defined earlier, were identified for 70 of the index cases (45 of the 53 in group 1, and 25 of the 26 in group 2). The age, parity, and previous incontinence surgery of the cases and controls are shown in Table 2; there were no significant differences

(using the 't-test' for continuous and χ^2 test for discontinuous variables). Although the index cases with incontinence on penetration appear to have had rather more pelvic surgery, this was not statistically significant, and reflected the fact that one patient had had eight previous incontinence operations and a hysterectomy. The filling and voiding phases of the cystometrogram were compared for the index cases and controls, and are shown in Table 3. Residual volume, cystometric capacity, pressure rise during filling, pressure rise on provocation, bladder com-

Table 2. Data relating to age, parity, and previous surgical history in index cases and controls for the two symptomatic groups

	Incontinence on penetration		Incontinence on orgasm	
	Index cases (n=45)	Controls (n=45)	Index cases (n=25)	Controls (n=25)
Age (years)				
mean (SD)	42.2 (9.2)	43.2 (8.8)	44.0 (9.8)	43.9 (9.3)
range	21-61	22-64	22-67	25-67
Parity				
median	3	2	3	2
range	0-10	0-7	0-5	1-6
Previous pelvic surgery				
No. of women with:				
any pelvic surgery	15	7	7	6
hysterectomy	9	4	3	2
incontinence surgery	10	6	6	6
Total no. incontinence operations	18	9	6	4

Table 3. Cystometric variables in index cases and controls for the two symptomatic groups

	Incontinence on penetration		Incontinence on orgasm	
	Index cases (n=45)	Controls (n=45)	Index cases (n=25)	Controls (n=25)
Residual volume (ml)	20.1 (69.1)	3.6 (7.4)	11.2 (38.0)	6.4 (12.5)
Cystometric capacity (ml)	558.7*(153.0)	493.1*(117.4)	507.0 (167.9)	505.6 (130.9)
Pressure rise—filling (cm H ₂ O)	11.7 (10.7)	12.9 (15.1)	15.7 (18.3)	18.9 (20.6)
Pressure rise—provocation (cm H ₂ O)	5.1 (13.9)	4.8 (16.3)	3.0 (12.1)	9.1 (22.4)
Bladder compliance (ml/cm H ₂ O)	86.6 (109.1)	79.9 (108.4)	61.6 (49.7)	53.5 (37.6)
Maximum voiding pressure (cm H ₂ O)	19.0 (20.5)	25.5 (19.0)	16.9 (21.6)	15.3 (18.6)
Peak flow rate (ml/s)	24.5 (10.7)	26.6 (12.1)	25.3 (12.1)	28.1 (12.0)
Urethral resistance (cm H ₂ O/ml/s ²)	0.056 (0.08)	0.046 (0.05)	0.142 (0.25)	0.057 (0.04)

Results are mean (SD) values.

Significance of difference between index and control group *P<0.05 t-test.

pliance, maximum voiding pressure, peak urine flow rate, and urethral resistance were examined, and compared using the paired *t*-test. Only the cystometric capacity of the group 1 index cases was significantly different from the relevant controls at the 5% level.

Discussion

This study shows that the occurrence of urinary incontinence during sexual intercourse is a much more frequent problem for the incontinent woman than is commonly recognized, being present in one in four of these individuals. The complaint was discovered only on direct questioning in the majority, but all considered it to be a significant problem, and welcomed the opportunity for discussion of what was for many a source of considerable embarrassment and marital disharmony.

The problem may be found in patients with all urodynamic diagnoses, but urinary incontinence occurring on vaginal penetration is more likely with genuine stress incontinence, whereas those women experiencing incontinence on orgasm alone have an increased incidence of detrusor instability. Several of those experiencing incontinence on orgasm during sexual intercourse also had urine leakage occurring during masturbation to orgasm, whereas none of those with incontinence on penetration had had urine leakage with other forms of sexual activity. Despite these associations the only cystometric variable showing any difference between those incontinent individuals who suffer from urinary leakage during intercourse and those who do not appears to be their slightly greater bladder capacity; since both groups had capacities which were well within accepted normal values, it is difficult to attribute any real significance to this finding.

In the male a smooth muscle sphincter is known to exist at the bladder neck level. Its function is probably genital rather than urinary, serving primarily to prevent reflux ejaculation; nevertheless, urinary leakage may also be prevented by this mechanism during extreme sexual arousal and orgasm. However, no such genital sphincter exists in the female, giving her a particular predisposition to this problem.

One might expect that those women with detrusor instability experiencing incontinence on intercourse, especially in association with orgasm, might have higher detrusor pressures than those not so afflicted; this has not been

demonstrated, although it is possible that bladder activity during intercourse may be very different from that found in the urodynamic laboratory. Bladder function was not assessed during sexual activity in this study and previous attempts have met with limited success for technical reasons (personal communications by Stanton 1981 and Bhola 1986).

Similarly, those women with genuine stress incontinence who experience loss of urine during penetration of the vagina at intercourse might be expected to have lower urethral resistance than women who do not suffer this symptom, but again this has not been shown in these studies. Urethral pressures were not examined consistently, although a proportion (19 index cases and nine controls) had urethral pressure profiles recorded as part of the investigation of their presenting urinary symptoms; a microtransducer technique was used to examine the urethra at rest and on stress (Hilton & Stanton 1983). The only significant difference identified was a reduction in the pressure transmission ratios in the third quartile of the functional urethral length in the index cases. Whilst it is accepted that the numbers are small, and unmatched with controls, we have previously demonstrated that similarly it is in the third quartile of the functional length that the transmission differences between symptom-free women and those with genuine stress incontinence are maximal (Hilton & Stanton 1983). It is possible therefore that these differences may represent a greater deficiency of pelvic floor function in those women with incontinence during intercourse; however, further investigation of this aspect of the problem is necessary before firm conclusions can be reached.

The treatment of these symptoms remains problematic. The identification of the underlying, or associated, urodynamic abnormality is obviously central to management, although it is my experience that these specific symptoms do not respond to conventional treatments so well as other urinary symptoms. A study of management of these difficult symptoms is in progress. Unfortunately for many women in whom the problem persists after definitive treatment of the urodynamic abnormality, the most appropriate management consists of sympathetic discussion aimed at helping the couple to come to terms with their disability.

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