

WOMEN WITH RECTAL OUTLET OBSTRUCTION HAVE ALTERED BLADDER FUNCTION

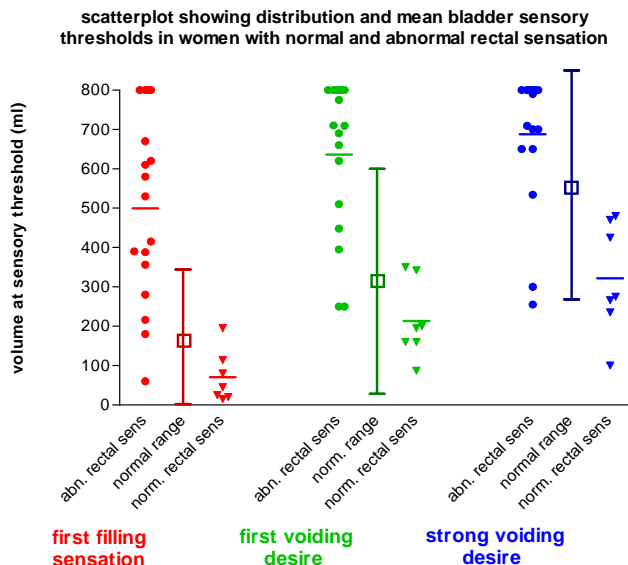
Hypothesis / aims of study

Previous urodynamic studies of women with constipation have demonstrated conflicting results, possibly on account of the inclusion of heterogenous patients in terms of severity and underlying pathophysiology of their constipation. Advances in anorectal physiological investigation allow constipated patients to be divided into those with colonic dysmotility and / or outlet obstruction, the latter being characterised by incomplete rectal evacuation and chronic retention of faeces. Although acute rectal distension influences voiding function and bladder sensation in a laboratory setting [1], the effect of chronic rectal distension is unknown. This study aimed to investigate bladder function in a homogenous group of constipated women with outlet obstruction confirmed on physiological investigation.

Study design, materials and methods

Women were recruited prospectively over a two year period, from those referred to a tertiary centre for investigation of intractable constipation refractory to simple dietary / medical measures. The study population comprised 24 women (median age 55, range 29-67 years), included on the basis of having symptoms of obstructed defecation in accordance with Rome II diagnostic criteria for functional bowel disorders [2] and outlet obstruction on evacuation proctography.

Local ethics committee approval was obtained prior to commencing the study. All subjects underwent anorectal physiological investigation, including anal manometry, quantification of rectal sensation by volumetric distension and endoanal ultrasound. Colonic transit and rectal evacuatory function were assessed using radio-opaque marker studies and evacuation proctography, respectively. Videourodynamic assessment, consisting of uroflowmetry, measurement of post-void residual, subtracted filling cystometry and pressure-flow studies, was performed in all subjects using a Laborie Aquarius urodynamic system. Urodynamic methods and terminology were performed in accordance with ICS standards. Bladder sensory function was quantified by recording the volumes and detrusor pressures required to elicit *first sensation of filling*, *first desire to void* and *strong desire to void* during filling video cystometry with radio-contrast infused continuously at a rate of 30 ml/min. Filling was stopped at 800ml to avoid overdistension. Data were compared to normal ranges obtained using an identical technique in asymptomatic healthy volunteers of similar age [3].



Results: Anorectal physiological investigation revealed delayed colonic transit, in addition to outlet obstruction, in 11/24 patients (46%). Rectal sensory function was normal in 7/24 patients (29%), and abnormal in 17 (71%). Voiding function was normal in 23/24 patients (96%), with only 1 patient having voiding difficulty (PFR<15ml/s and residual >100mls) Six women (25%) had impaired bladder sensation, with elevation of sensory thresholds above the normal range. Bladder sensation was absent in 4/24 women (17%) at 800mls, all of whom had significantly impaired rectal sensation. Comparison of urodynamic parameters between the subgroups of patients with normal and abnormal rectal sensation revealed similar voiding, but significantly different bladder sensory function (Table 1).

Urodynamic Parameter	normal rectal sensation n=7		abnormal rectal sensation n=17		p value (Mann-Whitney)
	Mean	SD	Mean	SD	
Peak flow (ml/s)	19.8	20.0	23.4	12.6	0.902
Residual (ml)	11	16	57	148	0.405
1 st sensation of filling (ml)	71	65	499	237	<0.001
1 st desire to void (ml)	213	98	636	194	<0.001
Strong desire to void (ml)	322	141	688	172	0.001
Pdet rise@max capacity (cmH ₂ O)	3.57	2.30	2.19	0.85	0.109
Urodynamic diagnoses	1 detrusor overactivity 1 urodynamic stress incontinence 5 normal		4 Absent sensation 6 impaired sensation 3 urodynamic stress incontinence 1 mixed DO/USI 3 normal		

TABLE 1: Urodynamic parameters in women with outlet obstruction according to rectal sensation. The two groups of women had similar mean ages but there was a statistically significant difference in the number of previous abdominal or pelvic operations undergone.

BLADDER SENSATION	RECTAL SENSATION					
	1 st sensation constant		Desire defaecate to		Maximum toleration	
	r	p	r	p	r	p
1 st sensation of filling	0.433	0.034	0.425	0.039	0.391	0.059
1 st desire to void	0.501	0.012	0.459	0.024	0.438	0.032
Strong desire to void	0.439	0.032	0.363	0.082	0.317	0.131

TABLE 2: Correlation of bladder and rectal sensory thresholds. Correlation analysis revealed significant association between bladder and rectal sensory function at first sensation and desire to void / defaecate.

Interpretation of results

In contrast to the effects of acute rectal distension on bladder voiding and sensory function, this study has demonstrated that voiding dysfunction is rare in a homogeneous cohort of women with objective evidence of rectal outlet obstruction. However, a proportion do have evidence of impaired, or absent bladder sensory function, and this was associated with impairment of rectal sensory function on physiological investigation in all women. Bladder and rectal sensory function appear to be significantly associated except at extremes of filling, which may be explained on account of censoring of data due to cessation of bladder filling at 800ml.

Concluding message

Chronic rectal evacuatory dysfunction in women with outlet obstruction does not appear to adversely affect voiding function. These data suggest that women with impaired rectal sensation are likely to have a co-existing impairment in bladder sensation, suggestive perhaps of a common aetiological factor. The clinical significance of impaired bladder sensation in this cohort of patients remains unknown, but may provide a pathophysiological mechanism for the development of future bladder dysfunction. The relationship between bladder and rectal sensory function warrants further investigation.

References:

1. Impact of rectal distension on the results of evaluations of lower urinary tract sensation. *J Urol.* 2003; **169**: 1392-1394.
2. Rome II: Functional disorders of the anus and rectum. *Gut.* 1999; **45**: II55-II59.
3. Normality of bladder filling studied in symptom-free middle-aged women. *J Urol.* 2004; **171**: 1567-1570.