

## DOES RECTAL DISTENSION ALTER BLADDER FUNCTION?

### Aims of Study

Treating constipation has been included in many protocols for the treatment of urinary incontinence as it has been felt that it worsens urinary symptoms especially in the elderly. Unfortunately there is little evidence for this assumption apart from anecdotal reports. Secondly a model for constipation has not been described, which this could be used to investigate the effect of rectal distension in humans.

This report describes a model applied to humans in a single blinded randomised controlled study to assess the effect of mild rectal distension on bladder function without causing discomfort.

### Methods

Women with urinary symptoms were recruited from the urogynaecology clinic. They attended with a full bladder voided on a flowmeter. They were then catheterised with a 12F catheter and a 4F pressure line. Rectally a 4F pressure line was inserted as well as a rubber balloon tied to a 12F catheter. A 3 way tap was attached to the rectal 12F catheter. Once the fluid filled pressure lines were flushed the rectal balloon was filled with 100mls of saline or left empty randomly according to random number table. Urodynamics was then performed filling the bladder at 100 mls/min with room temperature radio-opaque contrast. Once cystometric capacity was reached the bladder was drained and the rectal balloon if empty was filled or drained if it had previously been full. Bladder filling was again repeated at 100 ml/min with room temperature radio-opaque contrast until cystometric capacity was reached. The patient was not informed when the rectal balloon was full or empty.

The rest of the urodynamic test was carried out as usual with the rectal balloon drained. The figures obtained were analysed with the paired T-test (SPSS inc, Chicago, USA) and significance was achieved if  $p < 0.05$ .

### Results

Twenty three women were recruited into the study. None of the women found the rectal balloon uncomfortable. There was no statistical difference between the results obtained if the rectal distension occurred during the first fill or the second ( $P > 0.05$ ).

Urodynamic Parameters	Rectal Balloon filled (100ml) Mean (sd)	Rectal Balloon empty Mean (sd)	Paired T- test , p Significant*
First desire to void	179 ml (sd 99)	213 ml (sd 93)	-2.108, p = 0.047*
Maximum cystometric capacity	443 ml (sd 99)	427 ml (sd 115)	1.579, p = 0.129
Detrusor pressure at end of filling	10 cmH <sub>2</sub> O (sd 7.9)	8 cm H <sub>2</sub> O (sd 6.2)	2.484, p = 0.02*
Max detrusor pressure during filling	10 cm cmH <sub>2</sub> O (sd 7.9)	8 cmH <sub>2</sub> O (sd 6.4)	2.607, p = 0.016*

Table 1: Urodynamic parameters with rectal balloon filled and empty

The first desire to void was reduced significantly with a distended rectum and there were significant increases in the detrusor pressure during filling and at the end of filling.

One woman was diagnosed as having detrusor instability when her rectum was distended but did not have detrusor instability when her bladder was refilled with the rectal balloon drained.

There were no changes in the presence or number of rectal contractions whether or not the rectal balloon was empty or full and importantly for urodynamic testing subtraction of the intravesical and rectal lines was unaffected.

### Conclusions

This is the first report of the effect of rectal distension on bladder function in a randomised study. Mild rectal distension with a 100ml balloon is well tolerated and produces significant reductions in the first desire to void and increases in detrusor pressures generated during filling. This provides evidence that distending the rectum can induce changes, which could alter lower urinary tract function. This may be the mechanism by which constipation worsens urinary tract dysfunction.