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Author(s):	J Manning	C Benness	A Evers	A Korda	M Solomon
Institution	Pelvic Floor Unit		Royal Prince Alfred Hospital		
City	Sydney		Double Spacing	Australia	
Country					
Title (type in CAPITAL LETTERS)	IS URODYNAMICALLY PROVEN GENUINE STRESS INCONTINENCE (GSI) ASSOCIATED WITH ABNORMAL ANAL PHYSIOLOGY?				

Aim of study

An association between disorders of anorectal and lower urinary function has been reported. This study was undertaken in order to further investigate a previously demonstrated association between urodynamically proven GSI and symptoms of faecal incontinence, symptoms of sensory neuropathy and of obstructed defecation (1). The aim of this study was to compare the prevalence of anal physiologic abnormalities in women with urodynamically proven GSI and in controls.

Methods

Sixty seven women with urodynamically proven GSI were recruited to the study and compared with 16 age matched controls with no lower urinary tract symptoms. Investigations included digital examination of the anal canal, measurement of perineal position and descent on strain, trans-anal ultrasound (US), anal manometry, concentric needle EMG and pudendal nerve terminal motor latency studies (PNTML). Examination was performed with subjects lying recumbent in the left lateral position. Physical examination required assessments to be made of anal sphincter size, tone, bulk and length. These were quantified using a scale graded from 1-5. Perineal descent was measured using a scale from -5 to +5. Anal manometry was measured at 1 cm intervals, from 1 to 6 cm from the anal verge. The maximum anal sphincter pressure generated during maximal squeeze and cough was recorded. Trans-anal US recorded the thickness, texture and integrity of the external and internal anal sphincter at the upper, mid and lower levels of the anal canal. Movement of the external sphincter during anal squeeze was noted. Rectal and anal mucosal thickness was also recorded. Right and left PNTMLs were recorded using the St. Marks pudendal electrode. Concentric needle EMG was carried out when difficulty was encountered obtaining the PNTML.

Results

TABLE 1:	case	control
Age	56.2	58.4
Parous %	82	88
Forceps %	28	25
Vaginal deliveries	0.87	0.75
Previous anal surgery (%)	17	13
Frequent faecal incontinence	20%	0

The mean age and parity of cases and controls was not different (table 1).

Digital Examination: Table 2 compares physical examination findings.

Anal manometry:

The mean anal canal resting pressures were not different, 176 mm/Hg for cases vs 183mm/Hg for controls.

Average anal manometry measures for the 1st 3 cms of the anal canal, tended to be lower for cases, 131 mm/ Hg vs 147 mm/Hg for controls.

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For measurements 4-6 cm from the anal verge, average anal manometry measures for cases tended to be higher, 41 mm/Hg vs 36 mm/Hg. The maximum anal squeeze pressure was identical for cases and controls at 104 mm/Hg.

Maximal cough pressures also were not different, cases 89 mm/Hg vs controls 95mm/ Hg.

TABLE 2: PHYSICAL EXAMINATION	case	control
Anterior anal sphincter bulk	4.6	3.9 *P=0.04
Resting anal sphincter tone	4.9	4.2 *P=0.04
Puborectalis angle	4.9	4.2 *P=0.03
Anal canal length	4.3	4.6
Anal squeeze tone	4.5	3.9
Puborectalis squeeze	4.8	4.1 *P=0.02
Rectocele prevalence %	67	39% *P=0.03
Rectocele size	1.1	0.4 *P=0.035
Position perineum at rest	-0.68	-0.77
Position perineum at strain	0.74	-0.44 *P=0.003
Any perineal descent (%)	65	25 *P=0.03

Trans-anal Ultrasound:

The thickness of the anterior aspect of the external anal sphincter in the upper and mid levels of the anal canal was significantly thinner for cases than for controls. This corresponded to the presence of rectoceles in these women.

TABLE 3: ULTRASOUND MEASUREMENTS OF ANAL CANAL FOR CASES AND CONTROLS

	Case (mm)	Control (mm)
Position anal sphincter		
Upper anterior external	3.3	4.9* (P=0.005)
Upper posterior external	7.3	7.1
Upper internal	2.9	3.1
Mid anterior external	4.2	5.1
Mid posterior external	7.3	7.6
Mid internal	2.6	2.8
Lower anterior	4.4	5.3
Lower posterior	7.3	7
(Upper + mid + lower) anterior	11.8	15.2 (*P=0.018)

US detected defects in the external anal sphincter showed a trend to be more prevalent among cases than among controls. 12.3% vs 0%.

Abnormal texture of the external anal sphincter was noted in 23% of cases vs 6.3% of controls.

Internal sphincter defects were noted in 16% of cases vs 6.3% of controls .

EMG and PNTML:

There was a significantly longer average right PNTML, 1.84, in cases vs 1.35 in controls (P=0.03). The average left PNTML was 1.91 in cases vs 1.6 in controls.

Conclusions

Women with urodynamically proven genuine stress incontinence demonstrate significantly more perineal descent on straining. A significantly greater prevalence of rectoceles and a trend toward more defects in the internal and external anal sphincter were noted in cases when compared to controls. Differences in anal manometry were not detected. Evidence of neuropathy appeared to be significantly more prevalent among those with GSI.

Reference

1. Abstract 68, 23rd Annual Meeting IUGA, Buenos Aeres, 1998.