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IMPACT OF A VAGINAL PACK TO REDUCE CYSTOCELE DURING PREOPERATIVE URODYNAMIC STUDIES (UDS)

Hypothesis / aims of study

Previous publications have focused on the role of cystocele reduction to unmask stress urinary incontinence (SUI) [i]. Our goal was to determine the effect of a vaginal pack in reducing cystocele on both filling and voiding UDS findings.

Study design, materials and methods

After IRB approval, a retrospective database review of consecutive, neurologically intact, women who underwent UDS with and without vaginal pack for reduction of symptomatic cystocele was undertaken. All studies were performed with the same urodynamic equipment (Laborie Aquarius; Laborie Medical Technologies, Toronto, Canada), same protocol in standing position using a lubricated 4" wide gauze (pack) for the first "fill-void" tracing, then a repeat tracing without the pack (Figure 1). All tracings were reviewed by a third party investigator. Each study was categorized based on findings during filling cystometrogram (CMG) – stress urinary incontinence (SUI), detrusor overactivity (DO) +/- urge incontinence (UUI), mixed urinary incontinence (MUI), and normal (no DO or SUI) – and pressure-flow studies (PFS) – normal, bladder outlet obstruction (BOO) (detrusor pressure at maximum flow [$P_{det}Q_{max}$] > 25 cm H_2O with Q_{max} < 12 ml/sec [ii]), and voiding dysfunction (hypocontractility [$P_{det}Q_{max}$ < 10 cm H_2O], Valsalva voiding, impaired contractility, and urethral relaxation). CMGs were excluded if no VLPP was obtained, while PFS were excluded if the catheter was expelled during voiding. Valsalva leak point pressure (VLPP) was expressed as the difference in vesical LPP from baseline vesical pressure. Data on age, weight, parity, race, and prior anti-incontinence surgery were recorded. Cystocele (C) severity was graded according to standing lateral VCUG, with a large (C) defined as $\geq$ 5 cm height of (C) below the symphysis pubis (Figure 1) [iii]. Urethral support was classified as either a well-supported urethra (WSU) from prior anti-incontinence surgery, defined as $\leq 30^o$ change in urethral axis between lateral rest and straining VCUG views, or urethral hypermobility (UH) (>30^o change).

Results

Between November 1996 and December 2004, 188 women underwent "pack-no pack" (PNP) UDS (376 tracings), with 269 interpretable tracings available for review (136 CMGs, 133 PFS) in 150 women. Mean age was 66.1 $\pm$ 10.6 years (range 35-86), weight was 69.1 $\pm$ 12.5 kg (46-123), and parity was 2.7 + 1.4 (0-8), with 95% Caucasian. There were 77 with moderate (C) and 73 with large (C); 91 had UH and 59 had WSU. UDS findings are summarized in Tables 1 and 2. Normal CMGs were observed in 77% of all studies with the pack in place and after pack removal in 74%. SUI was unmasked by the pack in 8/136 studies (6%) – 4 with large (C) and 4 with moderate (C) – with a mean VLPP of 53.7 $\pm$ 9 cm H_2O (43-67). 12/136 (9%) leaked only after pack removal, of whom 9/12 had moderate grade (C). DO occurred with only the pack in 13, only after pack removal in 12, and with both in 11 studies. Normal PFS were observed in 36% of studies with the pack, and in 32% after pack removal. BOO was observed with the pack only in 6, after pack removal in 27, and with both in 23 studies. Of the 79 tracings showing BOO, co-existent DO was seen in 17 cases – 12 in large (C), 5 moderate (C). The majority of patients with voiding dysfunction voided with hypocontractility, and not by Valsalva. Patients with WSU had a higher incidence of BOO and SUI (41% and 16%, respectively) than those with UH (22% and 9%, P<0.05 for both BOO and SUI).

Interpretation of results

Incidence of SUI unmasked by the vaginal pack was lower than expected, possibly because the pack stabilized the entire anterior vaginal wall, rather than an obstructive process. Those with SUI on UDS had VLPPs suggestive of intrinsic sphincter deficiency. The pack had no significant effect on DO. The vaginal pack relieved BOO more often than it caused it.

Concluding message

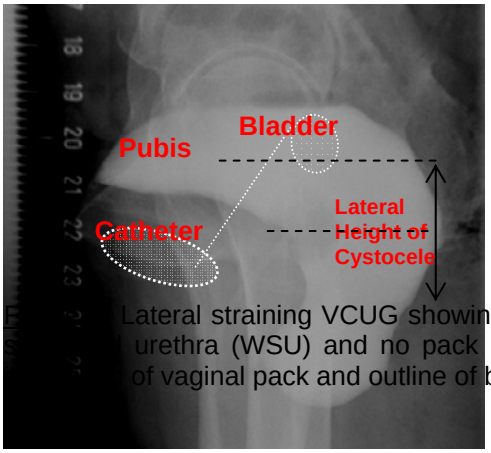
Similar to the Bonney test, the vaginal pack supports and stabilizes the urethra, bladder neck, and bladder base. This prolapse reduction modality revealed SUI in a small group of patients with UH and moderate (C), and in a slightly larger group of patients with WSU from prior anti-incontinence surgery. Using a recent BOO definition, the pack was rarely found to be obstructive. BOO co-existed with DO in nearly 25% of patients.

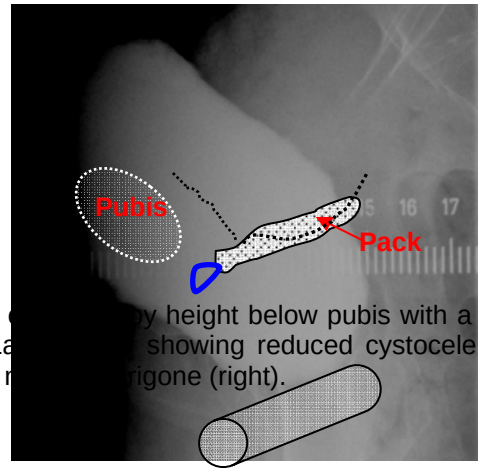
Table 1. Filling CMG findings in "pack, no pack" UDS.

ALL STUDIES (n=136)	**Without Pack**			
With Pack	SUI (n=14)	DO +/- UUI (n=15)	MUI (n=6)	Normal (n=101)
SUI (n=7)	4	0	1	2
DO +/- UUI (N=15)	0	3	2	10
MUI (N=9)	0	3	3	3
Normal (N=105)	10	9	0	86

Table 2. PFS findings in "pack, no pack" UDS.

ALL STUDIES (n=133)	**Without Pack**		
With Pack	Normal (n=43)	BOO (n=50)	Voiding Dysfunction (n=40)
Normal (n=48)	30	10	8
BOO (n=29)	4	23	2
Voiding Dysfunction (n=56)	9	17	30





Lateral straining VCUG showing large y height below pubis with a well-urethra (WSU) and no pack (left). La showing reduced cystocele with of vaginal pack and outline of bladder r rigone (right).

[i] J Urol, 1994. **152**: 931-934.
[ii] Urology, 2004. **64**: 675-681.
[iii] Urology, 2001. **58**: 33-37.