

MAGNETIC RESONANCE IMAGING (MRI) URETHRAL FILLING UNDER VALSALVA MANEUVER: A POTENTIALLY MORE SENSITIVE WAY TO DETECT FEMALE STRESS URINARY INCONTINENCE (SUI).

Hypothesis / aims of study

Not only does videourodynamics provide demonstration of urinary leakage and determination of the valsalva leak point pressure (VLPP), but also anatomical assessment of the lower urinary tract.

Magnetic resonance imaging provides the best anatomical interpretation of the pelvic floor. The association of dynamic fastscan MRI with urodynamic evaluation is an attempt to find more precise diagnostic methods to evaluate female SUI alongside pelvic floor dysfunction, avoiding the use of contrast media and ionizing radiation exposure.

Herein, we try to determine the potential advantage of MRI videourodynamics in the evaluation of SUI and pelvic floor dysfunction.

Study design, materials and methods

Seven patients were evaluated for SUI. All patients had a comprehensive history, physical examination, standard multi-channel urodynamic study and MRI videourodynamic, as described before [1] (Figure 1). Cistometry were performed in the supine position in both studies. Valsalva maneuvers were performed at three different occasions with the bladder volumes at 150, 250 and 350mls and the VLPP and the MRI Valsalva urethral filling pressure (VUFP) were determined. Pelvic floor laxity was evaluated by the H line and the M line [2]. The H line is the anteroposterior width of the levator hiatus and is drawn from the inferior aspect of the pubic symphysis to the posterior wall of the rectum at the level of the anorectal junction. The M line is the vertical descent of the levator hiatus and is drawn as a perpendicular line dropped from the pubococcygeal line to the most posterior aspect of the H line. Both of these lines become elongated during the Valsalva maneuver in the patient with pelvic floor laxity. (Figure 2)

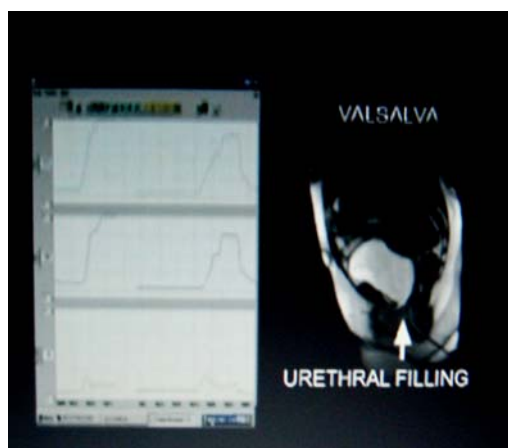


Figure 1

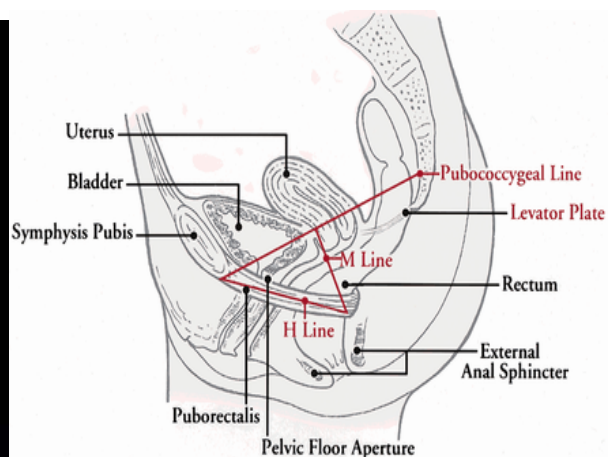


Figure 2

Results

Table 1

	VLPP (Standard Urodynamic) (cm H ₂ O)	VUFP (MRI videourodynamic) (cm H ₂ O)	M line (cm)
1	N	43	1,23
2	64	61	2,51
3	N	90	2,41
4	60	47	2,11
5	82	122	1,62
6	67	18	4,25
7	N	N	1,13

Table 2

VUFP (MRI videourodynamic) (cm H ₂ O)	M line (cm)
18	4,25
43	1,23
47	2,11
61	2,51
90	2,41
122	1,62
N	1,13

Interpretation of results

In three patients urinary leakage was evident in both studies, but a lower VLPP was observed during MRI urodynamics. In two patients urinary leakage was only demonstrated in MRI urodynamics. In one patient it was not possible to demonstrate incontinence [Table 1].

Except for one patient, there was a positive correlation between a lower MRI Valsalva urethral filling pressure (VUFP) and the degree of levator ani complex lesion [Table 2].

Concluding message

MRI urodynamics seems to offer advantages to the evaluation of female SUI by providing a more sensitive urinary leakage detection and anatomical determination of levator ani complex lesion in a single study.

References

1. Magnetic Resonance Imaging simultaneous to urodynamic examination: a new way to perform videourodynamics.
Video presented at the 34th ICS annual meeting, 25th – 27th August 2004.
2. Grading pelvic floor prolapse and pelvic floor relaxation using dynamic magnetic resonance imaging
Urology 1999, Sep, 54 (3) 454-7.