

446 Abstracts

8. Schaer GN, Schmid T, Peschers U et al: Intraurethral ultrasound correlated with urethral histology. *Obstet Gynecol.* 1998;91(1):60-64.
9. Frauscher F, Helweg G, Strasser H et al: Intraurethral ultrasound: Diagnostic evaluation of the striated urethral sphincter in incontinent females. *Eur. Radiol.* 8, 50-53 (1998).
10. Peschers U, Schaer G, Anthuber C et al: Changes in vesical neck mobility following vaginal delivery. *Obstet Gynecol.* 1996; 88(6):1001-1006.

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Title (type in CAPITAL LETTERS, leave one blank line before the text):

THE URETHRAL COLOR ULTRASOUND IMAGING IN THE DIAGNOSIS OF FEMALE INTRINSIC SPHINCTER DEFICIENCY : PRELIMINARY REPORTS

Aims of Study

The factors responsible for normal intrinsic sphincter closure are smooth muscle contractility, integrity of periurethral fascia, normal innervation and mucosal seal factors which include mucosal turgor and thickness and the vascularization of the urethra.

The urethral pressure profile (UPP) is at present the most urostatic measurement in the field of urodynamics. It is a topographic curve showing pressures along the length of the urethra. It does not, however, represent the real urethral function and, contrary to expectations, has been of limited practical value in the assessment and management of incontinence.

The aim of our study was to evaluate the feasibility of color ultrasound imaging of the urethra in association with UPP to diagnose intrinsic sphincter deficiency (ISD) in female patients.

Materials and Methods

We studied two groups of women and precisely 13 normal volunteers (mean age 29.0 years), with absence of pelvic floor disorders and without history of incontinence, and 15 incontinent patients (mean age 63.9 years), in whom an ISD had been previously diagnosed by clinical and urodynamic investigations (uroflowmetry, pressure/flow study, VLPP, static and dynamic UPP by microtransducers).

All subjects signed informed consent and underwent color ultrasound imaging with commercial digital equipment (HDI - 3000, MDI - 5000, ATL, USA) using 4-7 MHz convex and 5-12 MHz linear broad band transducers. Translabial sagittal scans of the urethra were obtained by placing the transducers directly on the external urethral meatus. The color ultrasound parameters were optimized for detection of parenchymal slow flows. Images obtained from each subject were independently examined by two sonographers who were blind to the subject's clinical status and age. The sonographers were asked to give a subjective score of the degree of urethral vascularization as follows : a) minimal or absent (1), b) poor (2), c) moderate (3), d) good (4). We compared the values of the maximum closure urethral pressure (MCUP), performed by microtransducers, of each pathologic patient with the ultrasound score. Statistical analysis, using the non-parametric Mann-Whitney rank sum test, was carried out to determine differences between ultrasound scores in the two groups.

Results

The data are shown in Tables I and II. All normal volunteers had a median score of 4 except in two cases with a score of 3. In the incontinent group ten cases had a score of 2 and five cases had a score of 1. The Mann-Whitney rank sum test showed that the differences between the ultrasound scores in the two groups was statistically significant (chi-square 22.694, $P > \text{chi-square} < .0000$).

Conclusions

We can affirm that color ultrasound imaging of the urethra seems to be feasible and useful in association with UPP in the diagnosis of ISD even if the color ultrasound imaging of the urethra cannot replace the UPP measurement.

Table I: Echographic score in normal volunteers

Pts	Age	Echographic score
GA	39	4
PA	23	4
IR	25	4
AM	25	4
FP	35	3
CL	30	4
MT	28	4
LV	20	4
CM	27	4
RR	29	3
AS	31	4
LR	32	4
DG	33	4
Mean value	29.0	3.8

Table II: Echographic score and MCUP in patients affected by ISD

Pts	Age	Echographic score	MCUP (cm H ₂ O)
BA	72	1	24.6
CG	65	1	37.5
ZA	47	1	21.2
TG	58	2	38.2
FA	81	1	24.1
ZV	71	2	29.0
BL	76	2	20.9
GA	67	2	23.2
DG	42	2	25.7
RN	60	1	27.5
LP	64	2	33.3
RB	47	2	25.0
CA	62	2	27.3
BB	74	2	28.0
DS	72	2	26.5
Mean value	63.9	1.6	27.4

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COMPUTER ASSISTED ULTRASOUND EVALUATION OF THE MOBILITY OF WHOLE URETHRA –THE USE OF THE METHOD IN TVT, BURCH KOLPOSUSPENSION AND HEALTHY VOLUNTEERS – PILOT STUDY.

Aims of Study

Good tissue resolution and wide accessibility makes the ultrasound an excellent method for assessment of mobility of female urethra and bladder neck. However, several problems hinder the scientific validity of the standard ultrasound examination:

1. The upper pole of the symphysis, a necessary structure for setting of coordinates, is not always clearly visible. The visualization of symphysis as a reference structure during pressure maneuvers is not easy.
2. During the examination, the probe is sometimes pressed to hard. This can artificially influence the examined structures. To be able to delineate the distal urethra in its non disturbed position, it is necessary to press the probe very gently.

We have developed a method for ultrasound assessment of the mobility of distal urinary tract at our experience with dynamic MRI. It avoids the mentioned drawbacks of standard ultrasound examination.

The aim of the study was to test the feasibility of our method on incontinent and healthy patients and to prove its possible use in larger a clinical study.

Methods

A short section of the ventral border of the symphysis, and the central echo of the discus interpubicus (Figure 1)