362
Najjari L[1], Kirschner-Hermanns R[1], Kemp B[1], Maass N[1]
1. University of Aachen

INFLUENCE OF POSTURE ON URETHRAL MOTILITY USING 3D/4D PERINEAL ULTRASOUND

Hypothesis / aims of study

The precise anatomical and physiological mechanisms involved in urinary incontinence have become more and more clear thanks to perineal ultrasound. Poor anatomical support of the bladder neck, bladder base and the proximal urethra, resulting in descent and hypermobility outside the intra-abdominal transmission zone, is considered as the pathological basis of stress urinary incontinence, and the clinical expierience shows that urinary loss occurs mostly in the erect position.

It has been reported that the posture of the patient has an influence on the position of the bladder neck, on the degree of urethral rotation and funnelling using 2D perineal ultrasound (1). The use of 3D/4D perineal sonography to evaluate the bladder neck is a relatively new area of investigation, and research continues to determine the most valid measurements and techniques. The aim of this study was to examine the influence of posture on urethral mobility in incontinent women using 3D/4D ultrasound imaging.

Study design, materials and methods

40 (age 57±12) women with clinical evidence of SUI underwent ultrasound imaging (GE Kretz Voluson 730 with 7-4 MHz 3D/4D US transducer) of the lower urinary tract both supine and standing. Two parameters were assessed: The retrovesical angle β according to Green between the vesical base and the dorsal urethra and the angle α between the perpendicular of the central symphysal line and a line crossing the lower symphsal rim and the vesical internal meatus. To quantify the urethral mobility, the differences of these angles at rest and on valsalva were calculated respectively for the supine and the standing position. These measurements were done on the base of 3D/4D dimensional volume datasets, which permitted the visualisation, and the assessment of the maximal amplitude of the urethral motility throughout the whole examination period.

Results

Whereas the simple angle α was significantly higher standing than supine both at rest (40° and 20°) and on valsalva (70° and 50°), there was no significant difference in the urethral mobility (29° each). The retrovesical angle β showed no significant difference between the standing and the supine position concerning the simple angle at rest (117° and 117°), on valsalva (127° and 124°) and the urethral mobility (9° and 7°).

Interpretation of results

The use of four-dimensional ultrasound imaging proved to be practical for the diagnostic of the dynamics of the lower urinary tract. The technique simplifies the diagnostic and improves the understanding of the etiology in a non-invasive manner. The subsequent analysis of the acquired four dimensional volumes permits an exact, repeatable and convenient assessment of the structure and motility of the urethra and the bladder neck.

Concluding message

Because the position of the patient has no influence on the urethral mobility, we consider the supine examination to be sufficient and effective for the assessment of this parameter in incontinence diagnostics.

References

1. Dietz HP, Clarke B. The influence of posture on perineal ultrasound imaging parameters. International urogynecology journal and pelvic floor dysfunction 2001;12:104-106

Specify source of funding or grant	**None**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**No**
This study did not require eithics committee approval because	**We did not seek for an ethics commitee approval because the results of the study are based on a slight modification of the established method of ultrasound examination that was performed with a diagnostical indication. The examination that was required anyway was extended for only a few minutes to obtain the additional information for the study. The patients were informed about this fact and gave their consent.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**