

TOMOGRAPHIC ULTRASOUND-BASED INSPECTION OF A SUCCESS: FUTURE-PROOF AND CONVENIENT PLACEMENT OF TENSION-FREE OBTURATOR TAPE IN FEMALE STRESS INCONTINENCE

Hypothesis / aims of study

Tomographic Ultrasound Imaging (TUI) is a technique that has been applied in diverse domains [1][2]. In this work we first measure, by means of TUI, the position of implanted Tension-free Obturator Tape (TOT) and later evaluate its impact on the satisfaction of stress urinary incontinent women.

The main contributions of our work are twofold: First, we observe that the position of the tape changes only marginally over time, namely between surgery and follow-up. Second, we compare the position of the tape among subjective cured and uncured patients and determine a significant correlation between position and outcome.

Study design, materials and methods

This retrospective study comprises 32 urodynamically proved stress incontinent women who were operated by the same surgeon, using the same operative method, and employing PVDF tapes. Directly after surgery and on follow-up, tomographic ultrasound imaging was performed on 4D volumes. The uppermost slice on the axial plane is placed at the position of the Meatus Urethrae Internus (MUI) at rest. In caudal direction further 8 slices are obtained with a 4 mm inter-slice distance. The position of the tape is defined by the slice number where the major part of the tape is located, as well as by the distance between tape and urethra. Statistics were measured using Wilcoxon-Rank-Test and Mann-Whitney-U-Test as appropriate.

Results

The distance between tape and urethra experiences a negligible variation (median 4.6 mm (0.24 - 0.74) versus 4.3 mm (0.26 - 0.76)) over a median time period of 320 days. In addition, after this period the position of tape, according to the TUI slice number, differs only marginally (median 7 (6 - 8) versus 7 (5 - 8)).

At follow-up 26 (81.3%) patients were subjective cured, while 6 patients remained uncured.

In the case of subjective cured patients, the position of the tape was significantly more caudal than in the uncured group. This holds directly after surgery (median 6.5 (6 - 7) versus 7 (6 - 8)) as well as at follow-up (median 7 (5 - 8) versus 6 (5 - 7)).

Interpretation of results

There is almost no migration of the tape over time. In subjective cured patients the tape is typically more caudal than in uncured patients, whereas the distance between tape and urethra does not differ among these groups.

Concluding message

Tomographic ultrasound imaging is a convenient method to evaluate the position of the TOT. Since the position of the tape varies only marginally over time, the success of the operation can be indicated at the first postoperative day.

References

1. Dietz H. Quantification of major morphological abnormalities of the levator ani. *Ultrasound Obstet Gynecol* 2007; 29: 329 – 334.
2. Goncalves L, Espinoza J, Romero R, Kusanovic J, Swope B, Nien J, Erez O, Soto E, Treadwell MC. Four-dimensional ultrasonography of the fetal heart using a novel Tomographic Ultrasound Imaging display. *J Perinat Med* 2006; 34: 39–55.

Disclosures

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