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PELVIC FLOOR ULTRASOUND TO EVALUATE TVTO BIOMECHANICS AND OPTIMIZE ITS LOCALIZATION - THE 1/2 FORMULA

Hypothesis / aims of study

The transobturator tape was developed to reduce the risk of complications that occurred with retropubic tape. Differences in biomechanics (except less acute angle of the TVTO) between both tapes are fairly well known. There is not enough knowledge to choose the most appropriate sling for individual patient. The aim of the study was to evaluate TVTO biomechanics in ultrasound and to investigate possible reasons for failure.

Study design, materials and methods

Finally, in our article the results from 63 incontinent women, who met the inclusion criteria, are analyzed. First procedures (n=29) were performed according to the standard technique with the incision starting at 1/3 ultrasonographically measured urethral length - typical technique for TVT used in our departments, called formula 1/3. Pelvic floor ultrasound was performed (1) using a vaginal probe 5-9 MHz. Urethral length, linear urethral dorsocaudal movement (LUDM), longitudinal urethral tape localization (LUTL) and distance between hypoechoic urethra and tape (DHUT) were explored among others (1, 2). Patients had complete urogynecologic exam in agreement with routine department protocol before and 6 months after the procedure. For this analysis patients were divided into 2 groups: cured and not cured. Incontinent women after procedure (not only those who had no effect but with improvement as well) were included in not cured group.

Results

Short time results which we achieved after first procedures were worse than those we had obtained earlier after TVT (34,5% not cured). Ultrasonographically assessed TVTO biomechanics showed that the probable reason for it was, as compared to TVT, the small tape mobility during pressing. We hypothesized that better results should be achieved if the tape were placed closer to high pressure zone. That was the reason why the beginning of incision was changed from 1/3 to 1/2 of ultrasonografically measured urethral length - formula 1/2. Then the results were much better (11,8% not cured). Summarized results of formula 1/3 and 1/2 are presented in Table 1.

Table 1. Profilometry results and pelvic floor ultrasound characteristics of urethral mobility and TVTO localization in cured and not cured women

	cured			not cured		
	1	2	3	1	2	3
DCU (mm)	-0,4	-3,3	2,6	3,75	-1,6	5,4
LUDM	13,8	8,8	25,2	11,25	3,1	19,4
DHUT (mm)	4,1	2,95	5,6	5,9	4,9	7,4
MUCP chH2O	35,0	15	55	32,5	10	60

* - DCU - distance from centre of urethral length: "-" - shift to bladder base, "+" - shift to external urethral orifice, ** - MUCP - maximal urethral closure pressure in profilometry

1 - median, 2 - 10th percentile, 3 - 90th percentile

Interpretation of results

We found differences in urethral mobility, DCU and DHUT between both groups. Our results showed that optimal DCU was between -4,6 and +2,6 mm. Distance > + 3,9 mm always resulted in incontinence. DCU between +2,8 and +3,9 mm was found in 4 cured patients with hypermobility and optimal DTUL, and 4 not cured women. Low urethral mobility and highly fixed urethra, in our opinion, had negative influence on the cure result. DHUT > 5mm also had negative impact on continence. We found no correlation between MUCP and cure rate. We found no important differences in complications rate in both groups.

Concluding message

During pressing, as compared to TVT, TVTO is almost not moving. Our observations suggest that to obtain similar results as after TVT, the localization of incision before TVTO placement should be different. During TVTO the procedure, beginning of the incision should be changed from 1/3 formula to 1/2 formula. We have the impression that women with less mobile urethra and highly fixed urethra are not good candidates for TVTO. In the studied patients the results of profilometry (ISD - intrinsic sphincter deficiency) had no influence on cure result after TVTO placement, however urethral mobility and tape position (DCU, DHUT) did.

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Is this a Randomised Controlled Trial (RCT)?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**No**
This study did not require ethics committee approval because	**Since all study patients underwent routine investigations and introital US was used for quality assurance purposes, the study was exempted from formal Ethics Committee approval by the Institutional Review Board of the University of Göttingen, Germany. Nevertheless, all patients were informed about the study and consented to participate.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**