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SONOGRAPHY TAPE CHARACTERISTIC AND INCONTINENCE OUTCOME AFTER TRANS-OBTURATOR TAPE (TOT) SURGERY

Hypothesis / aims of study

Midurethral synthetic slings (MUS) have emerged over the past decade as the most common procedure for the surgical treatment of stress urinary incontinence (SUI). However, 5-23% of patients will have persistent or recurrent urinary incontinence after surgery.

Aim of the study was to evaluate if, in patients who underwent trans-obturator midurethral sling (TOT), trans-perineal ultrasonography is able to recognize improper positioning or dislodgment of the tape or other factors that may be associated with failed surgery

Study design, materials and methods

From 2005 to 2010, a total of 120 patients underwent trans-obturator midurethral sling (TOT) for SUI. In November and December 2012, 54 patients accepted to perform a urological evaluation including clinical examination, incontinence outcome evaluation and ultrasound scan by trans-perineal approach. Ultrasound was performed with the woman in the supine position, with a full comfortable bladder, at rest and then during maximum Valsalva manoeuvre using 3.5-5 MHz curved array probes. To assess urethrocele we measured the distance between the bladder neck and the longitudinal axis of the symphysis. We recorded the measurement above and below the longitudinal axis of the symphysis as negative and positive, respectively. Further parameters evaluated are: a) the position of the mesh along the urethra: it was calculated by means of a mathematical formula which takes in account the urethral lenght to obtain 3 different position: 1) 0-40% proximal to the bladder neck 2) 40-60% midurethral position 3) 60-100% distal position; b) the movement and in particular the symmetry of the lateral arms of the mesh during straining and 3) the presence or absence of an open bladder neck. On the basis of the incontinence outcome patients were allocated into two main categories: dry (no leakage during clinical and/or stress test and/or reported by patients) vs. wet. We considered wet the patients with any kind or grade of leakage. We also evaluated the presence of voiding and storage symptoms in the post-operative. Statistical analysis was performed by using X2 test for categorical data comparisons. Multiple logistic regression analysis was used to test at the same time and adjust the relationship of various potential predictive variable with failed surgery.

Results

At a mean follow-up of 40 months (range 24-84 months) 39/54 patients were completely dry and 15 were incontinent. Table 1 shows post-operative ultrasound parameters evaluated. No difference in post-operative urethrocele evaluation and open bladder neck in continent and incontinent patients was present. Sling location at the distal urethral position is related to a worst outcome as well as an asymmetry of the slings arms. Logistic regression analysis demonstrated that only the relationship between sling position and outcome is significant and independent from the pre and post-operative urethrocele grade and others confounders. Tape placement in the lower third of the urethra was associated with a higher failure rate: in particular the tape placement in the distal third of urethra increased risk of failure by 14 folds as compared with tape placement in proximal third of urethra (OR: 14.3; 95%CI:1.05-196). It has also been demonstrated that the relation between negative outcome and storage symptoms is significant. On the other hand neither storage symptoms nor voiding symptoms are related to any sling position.

Interpretation of results

Ultrasonography is a non invasive method that provides exact information about the position and functional behaviour of the TOT sling at rest and during straining. Our results show that the relative tape position along the urethra and the symmetry of the lateral arms of the tape during the Valsalva manoeuvre affect the mechanism of action of the TOT and consequently the outcome.

Concluding message

A correct TOT positioning along the urethra seems to play a role in the incontinence outcome, so the correct surgical technique is mandatory to obtain the best results. Further studies are necessary to correlate pre-operative anatomical characteristics of the patients (the urethral length and the angle between the urethra and the obturator space) and the surgical technique. Not only the correct mid-urethral position but also the dynamic change in tape shape during straining is important. Furthermore the modification of these parameters at long-term follow-up should be evaluated to understand if the sling tends to move in the time or if other factors could affect its position.

References

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