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STRESS URINARY INCONTINENCE AFTER TRANSOBTURATOR MESH FOR CYSTOCELE REPAIR

<u>Hypothesis / aims of study</u>
Transobturator mesh is commonly used for cystocele repair, and such a repair is often undertaken in combination with a suburethral sling in order to treat concomitant stress urinary incontinence. This may not always be desirable or indicated, e.g. if there is significant voiding dysfunction, minimal symptoms, or negative findings on urodynamic testing. In this study we therefore intended to analyse the effect of transobturator mesh placement on symptoms of stress incontinence in women without concomitant anti- incontinence surgery.

3D/4D translabial ultrasound can reliably identify polypropylene mesh implants in the anterior vaginal wall(1). The mesh is usually situated posterior to the bladder neck, caudal to the trigone and the posterior bladder wall, and is apparent as a highly echogenic linear structure. It is more clearly visible on Valsalva and behaves like an oversized trigonal sling, rotating around the fulcrum of the symphysis pubis. As such, it may stabilize the bladder neck and have some limited compressive effect on the urethra. Our hypotheses were 1) stress urinary incontinence is likely to improve after transobturator mesh for anterior compartment prolapse and 2) mesh position determines this effect.

<u>Study design, materials and methods</u>
Ninety-eight patients with transobturator mesh for large or recurrent cystocele were seen in the context of prospective surgical audit projects. All participants underwent an interview, physical examination and 3D/4D translabial ultrasound. All patients were interviewed regarding symptoms of stress urinary incontinence pre- and postoperatively and whether they considered themselves cured, improved, same or worse with regard to stress leakage. Ultrasound assessments were performed in the supine position after bladder emptying (2).

Sixty women had not undergone a concomitant anti- incontinence procedure, either due to surgeon or patient preference, due to concerns regarding voiding function, or due to negative urodynamic findings. Several months after the audit appointment, we analysed the 4D ultrasound volume datasets of this subset of the population, using the proprietary software GE Kretz 4D View v.5 on a PC. We evaluated the position of bladder neck and most dependent point of the bladder relative to the symphysis pubis and measured the minimal distance between mesh and symphysis pubis in the midsagittal plane (see Figure).

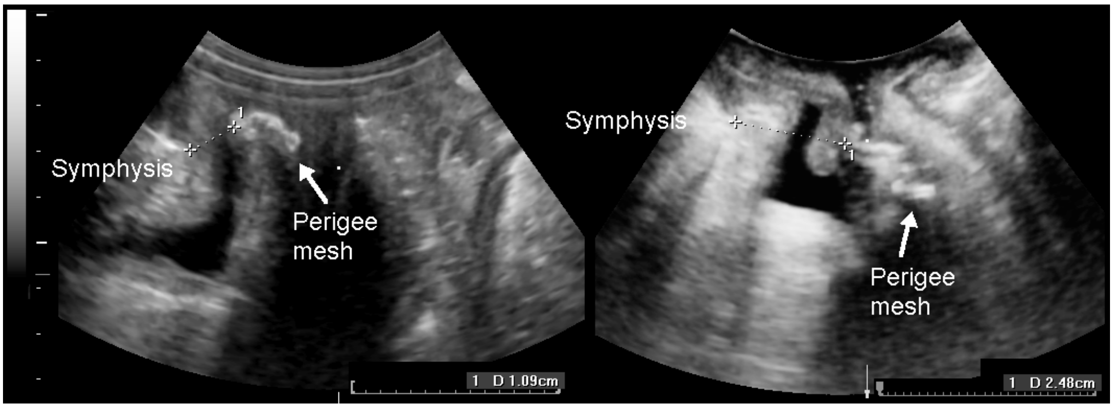

Figure: Ultrasound images showing measurement of the gap between symphysis pubis and mesh on maximum Valsalva (midsagittal plane). The left image shows a gap measurement of 10.9 mm in a patient who was subjectively cured of stress urinary incontinence after Perigee mesh surgery.The right image shows a gap of 24.8 mm in a patient complaining of worsened stress leakage postoperatively.

<u>Results</u>
Mean follow up was 7.5 (range 0.7-24) months. The mean age at follow-up was 61 years (range 31-84). Mean vaginal parity was 3 (range 0-9). There were 79 cases of Perigee mesh (AMS) and 19 anterior Prolift (Gynecare) mesh cases. Those with a concomitant suburethral sling insertion (n=38) were excluded, leaving 60 patients for analysis. Of those, 26 were stress incontinent before transobturator mesh repair, and 23 of 26 reported cure (n= 13) or improvement (n=10) of stress incontinence postoperatively. Two patients remained the same and one complained of worsened stress leakage. Seven of 34 previously stress continent women complained of de novo stress incontinence at their postoperative appointment, implying a significant net positive effect on symptoms of stress urinary incontinence (P=0.002 on X2 test). This effect was not associated with the length of follow-up.

On ultrasound, mean bladder neck descent on maximum Valsava for the ‘cured/ improved’ group was 21.6mm (SD ±8.7) compared with 26.7mm (SD±9.76) for the ‘same/worse’ group (P=0.037). The distance between the posterior margin of the symphysis pubis and the most ventral part of the mesh (symphysis-mesh gap) was 19.9mm (SD ±6.47) in the ‘cured/ improved’ and 23.6 mm (SD ±6.12) in the ‘same/worse’ group (P=0.032). There was no statistically significant difference between the two groups in terms of clinical prolapse grading or ultrasound quantification of anterior compartment descent.

Interpretation of results

It has been shown that the curative effect of the tension free vaginal tape on stress incontinence is likely to be due to dynamic compression of the urethra between implant and symphysis pubis (3). As the transobturator mesh behaves like an oversized trigonal sling on Valsalva, rotating around the fulcrum of the symphysis, it could potentially exert a similar (if limited) compressive effect on the urethra and contribute to improvement of stress urinary incontinence. In this study, 88% (23/26) of stress incontinent women reported cure or improvement of their symptoms after transobturator mesh for cystocele repair. This implies a net positive effect, as only 8 women reported worse or de novo stress incontinence postoperatively (P=0.002).

Improvement or cure was associated with a narrower symphysis-mesh gap, suggesting a potential role for a direct compressive effect. However, there also was a significant association between postoperative stress incontinence and bladder neck descent. Better stabilisation of the bladder neck was associated with a reduction in symptoms, making this an alternate explanation for the beneficial effect of transobturator meshes on stress incontinence.

Concluding message

Transobturator mesh for cystocele repair appears to have a net positive effect on urinary stress incontinence. This may be due to bladder neck stabilisation or due to dynamic urethral compression as with suburethral slings. Women with improved symptoms of stress urinary incontinence after transobturator mesh had, in general, a narrower symphysis-mesh gap and less bladder neck descent on Valsalva, implying a more rigid mesh positioned closer to the symphysis pubis. It remains unclear whether these differences are due to individual anatomical variations or surgical technique.

References

1. Int Urogynecol J 2006; 17(S2): S139
2. Ultrasound Obstet Gynecol 2004; 615-625
3. Ultrasound Obstet Gynecol 2004; 23:267-271

FUNDING: **Nil**

HUMAN SUBJECTS: **This study did not need ethical approval because All data was obtained in the context of surgical audit projects but followed the Declaration of Helsinki Informed consent was not obtained from the patients.**