

TEACHING RETROPUBIC MIDURETHRAL SLING PROCEDURE ON A SURGICAL SIMULATION MODEL

Introduction

Stress urinary incontinence is a common female problem that can be cured with retropubic midurethral sling. Urologists and gynaecologists in training (residents) must learn this procedure but no objective method to assess proficiency exists. We developed a training video for the "bottom-up" retropubic midurethral sling (TVT; Ethicon, Sommerville, NJ) used for the surgical treatment of urodynamic stress incontinence. This was incorporated into a novel Objective Structured Assessment of Technical Skills (OSATS) 25-item checklist in an effort to evaluate trainees in a standardized, way that can be reproduced and objectively scored.

Design

A surgical simulation testing program was implemented at a large US University in 2009. Approval from the institutional review board was obtained. A descriptive training video for retropubic, midurethral sling placement on an inanimate surgical simulation model was developed, based on published procedural instructions, to educate participants. A multi-disciplinary team of subject experts (gynecology and urology) determined the procedural steps necessary for surgical success utilizing the modified Delphi criteria. A novel, objective, 25 item checklist was developed (scored 0-25) and results were compared to a more subjective 7 item "Global Rating Scale" (scored 7-35) as well as a simple "PASS" or "FAIL". The time to perform the procedure was also considered a metric of proficiency. Validation and reliability studies were performed on the novel 25 item checklist. These included inter-rater reliability (the extent to which the results are replicated between raters), construct validity (the extent to which the test can distinguish between those with skill and those without skill) and concurrent validity (the extent to which the test correlates with the "gold-standard" or other measures of the same domain). Performances were recorded and reviewed by 3 experienced surgeons.

Results

The video was produced and edited for content and time. A total of 34 OB and 10 Urology Residents were tested. Inter-rater reliability indexes (Kappa agreement) were highly significant for the 25-item checklist (0.889), the Global Rating Scale (0.754), time (0.564), and the "PASS/FAIL" was 0.915 ($p < 0.001$ for all).

Construct validity was measured by comparing Urology to OB/GYN trainees using ANOVA. Urology residents reported more experience overall with mid urethral sling procedures based on pre-test questionnaires. The average combined score for the 25-item checklist was 11.7 ± 6.0 for OB Residents and 13.1 ± 5.1 for Urology Residents ($p = 0.522$). The average Global Score was 18.2 ± 8.3 in OB Residents and 23.8 ± 6.2 in Urology Residents ($p = 0.055$). The overall PASS rate in OB Residents was 17.6% and 30.0% in Urology Residents ($p = 0.282$). The average time was $13:55 \pm 4:46$ in OB Residents and $13:50 \pm 4:08$ in Urology Residents ($p = 0.955$).

Concurrent validity was determined by applying Pearson's correlation coefficient (Student-Neuman-Keuls test) to scores from the 25-item checklist and average time ($r = 0.522$, $p < 0.01$). A strong correlation was noted between the 25-item checklist and the Global score ($r = 0.877$, $p < 0.001$).

Conclusion

The video is useful to instruct OB/GYN and urology residents in performing retropubic midurethral slings prior to participating in a simulated surgical midurethral sling procedure. The 25-item checklist as well as the Global Score achieved inter-rater reliability and concurrent validity, but failed to achieve construct validity. Modifications will be made to the 25-item checklist and it will be re-evaluated in subsequent years.

Disclosures

Funding: Unrestricted Educational Research Grant, Ethicon Women's Health & Urology, Sommerville, NJ; Balance made-up from private sources **Clinical Trial:** No **Subjects:** NONE