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IS SLING STIFFNESS ASSOCIATED WITH POSTOPERATIVE VOIDING DYSFUNCTION? A COMPARISION OF TWO POLYPROPYLENE MIDURETHRAL SLINGS

Hypothesis / aims of study: Recent modifications to midurethral slings (MUS) by some manufacturers have resulted in stiffer slings which are less resistant to deformation in vitro, a perceived deficiency of the most popular MUS products. The performance of these stiffer materials after implantation, and the incidence of voiding dysfunction, has not been fully investigated. The aim of this study was to report on the postoperative voiding dysfunction after two types of suprapubic and transobturator MUS: high-stiffness (Bard) and low-stiffness (AMS).

Study design, materials and methods: After obtaining Institutional Review Board approval, we retrospectively evaluated 2 groups of women who underwent MUS. Group 1 consisted of 80 consecutive women who underwent high-stiffness MUS (40 transobturator, 40 suprapubic), under a manufacturer-institutional agreement. Group 2 consisted of the most recent 80 consecutive women who underwent an established low-stiffness MUS (40 transobturator, 40 suprapubic). All procedures were performed by one surgeon using standard placement and tensioning technique. All voiding trials were performed per protocol. The primary outcome consisted of postoperative voiding dysfunction, which was subcategorized into asymptomatic high post void residual (PVR; > 150 cc), positional voiding, urinary retention < 30 days, and retention requiring urethrolysis. Secondary outcomes included validated quality of life (QOL) questionnaires: Incontinence Impact Questionnaire (SF-IIQ-7), Urogenital Distress Inventory (UDI-6), and Global Visual Analog Scale (VAS; 1-10). Chi-square was used to make pairwise comparisons of outcome frequency. Mann Whitney test was used to compare non-normally distributed variables between outcome groups. All statistical analyses were conducted using MedCalc 9.3.2 software (Belgium), $p < 0.05$.

Results: Of 40 women undergoing high-stiffness suprapubic sling, 17 (42.5%) women had voiding dysfunction: high PVR (5%), retention < 30 days (25%) and urethrolysis (12.5%). In comparison, 3 (7.5%) women undergoing low-stiffness suprapubic sling had voiding dysfunction: high PVR (5%) and retention < 30 days (2.5%) ($p < 0.001$). The incidence of voiding dysfunction was similar between high-stiffness and low-stiffness transobturator slings (not significant). Fifteen percent of women undergoing a high-stiffness transobturator sling had postoperative voiding dysfunction: high PVR (10%), retention < 30 days (2.5%), and positional voiding (2.5%). In comparison, 12.5% of women had voiding dysfunction after low-stiffness transobturator sling: high PVR (5%), positional voiding (2.5%), retention < 30 days (2.5%), and urethrolysis (2.5%). Despite the differences in postoperative voiding dysfunction, QOL indices were significantly improved for all groups.

Interpretation of results: In our hands, tensioning a stiffer suprapubic midurethral sling in the same manner as a sling of lower stiffness was associated with a significant increase in postoperative voiding dysfunction. A similar difference was not observed between high-stiffness and low-stiffness transobturator slings. The women undergoing each type of suprapubic sling were statistically similar and the difference in outcomes after suprapubic slings cannot be readily explained by a learning curve. If a practitioner experienced in the placement of low-stiffness suprapubic MUS incorporates high-stiffness slings into their practice, they may need to employ alternative tensioning techniques.

Concluding message: We noted a significantly higher incidence of postoperative voiding dysfunction in women undergoing high-stiffness suprapubic MUS, when compared with low-stiffness suprapubic MUS. No significant difference was observed in high- and low-stiffness transobturator slings, suggesting that this approach may be less dependent on specific tensioning technique.

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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**