A New Quadratic Sling for Male Stress Incontinence: Retrograde Leak Point Pressure as a Measure of Urethral Resistance

ABSTRACT

Introduction: Objective methods are essential for evaluating post-prostatectomy incontinence. While symptom score and pad weight may be the most useful methods to evaluate preoperative vs postoperative continence, neither is useful for guiding intraoperative sling tension. The Virtue quadratic sling (Coloplast, Humlebaek, Denmark) is a device for treating post-prostatectomy incontinence that combines a transobturator and prepubic surgical approach. We examined urethral resistance by measuring retrograde leak point pressure during key portions of the surgery.

Materials and Methods: A total of 22 consecutive men who elected to undergo Virtue sling surgery were evaluated with retrograde leak point pressure before and during the surgery. Retrograde leak point pressure was measured via perfusion sphincterometry at baseline, after transobturator tensioning, after prepubic tensioning, and after transobturator and prepubic arms were secured in place.

Results: Mean patient age was 70 years. Mean baseline retrograde leak point pressure was 33.4 ± 8.8 cm water. After transobturator tensioning, mean retrograde leak point pressure increased to 43.3 ± 6.8 cm water. After prepubic tensioning mean retrograde leak point pressure was 55.8 ± 8.7, and final retrograde leak point pressure after transobturator and prepubic fixation increased to 68.8 ± 6.0 cm water. Each mean retrograde leak point pressure value was significantly higher than the preceding value.
**Conclusion:** The Virtue sling provides ventral urethral elevation using a transobturator approach, and a long segment of urethral compression against the genitourinary diaphragm via a straightforward prepubic technique without the risks of bone screws or retropubic needle passage. Transobturator and prepubic components of the quadratic fixation contributed to increasing urethral resistance as measured by intraoperative retrograde leak point pressure. This quadratic technique has a potentially greater ability to provide urethral compression than does a purely perineal or transobturator sling.

**KEY TAKEAWAYS**

- Tensioning the prepubic arms (PP) of the Virtue sling creates urethral compression, which causes greater resistance than tensioning the transobturator arms (TO) which creates urethral relocation.
- Combining both the TO and PP approach by the tensioning and fixation of the arms in a quadratic sling creates greater urethral resistance than the independent actions of either mechanism.