A Meta-Analysis of the Performance of Retropubic Mid Urethral Slings versus Transobturator Mid Urethral Slings

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Purpose: We evaluate the efficacy and complications after retropubic and transobturator mid urethral slings in the treatment of female stress urinary incontinence.

Materials and Methods: A systematic literature review was performed using MEDLINE®, limited to randomized controlled trials with a minimum followup of 1 year and type 1 grafts. Statistical analyses were performed using StatsDirect Version 2.7.9 (StatsDirect Ltd, Altrincham, UK).

Results: Retropubic mid urethral sling procedures showed statistically significant improvements in objective cure (OR 1.35, 95% CI 1.10−1.67, p=0.005) and subjective cure (OR 1.24, 95% CI 1.04−1.49, p=0.02). Bladder perforations (OR 5.72, CI 2.94−11.12, p <0.0001) and bleeding (OR 2.65, CI 1.54−4.59, p=0.0005) were significantly more common with retropubic mid urethral slings, whereas vaginal perforations (OR 0.29, CI 0.15−0.56, p=0.0002) and neurological symptoms (OR 0.35, CI 0.25−0.5, p <0.0001) were more common with transobturator mid urethral slings. Operative time was significantly longer for retropubic mid urethral slings than transobturator mid urethral slings (OR 1.38, p <0.0001). No significant differences were noted in mesh erosions and exposure, urinary retention, infection, lower urinary tract symptoms and length of hospital stay.

Conclusions: Retropubic mid urethral slings showed better objective and subjective cure rates than transobturator mid urethral slings. However, bladder perforation and bleeding were more common with retropubic mid urethral slings. Operative time was longer for retropubic mid urethral slings. Transobturator mid urethral slings were associated with more cases of neurological symptoms and vaginal perforation.

Key Words: urinary incontinence, stress; suburethral slings; meta-analysis

Abbreviations and Acronyms

LUTS = lower urinary tract symptoms

RCT = randomized controlled trial

RMS = retropubic mid urethral sling

SUI = stress urinary incontinence

TMS = transobturator mid urethral sling

TVT-O = tension-free transvaginal tape-obturator

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Editor's Note: This article is the fourth of 5 published in this issue for which category 1 CME credits can be earned. Instructions for obtaining credits are given with the questions on pages 1072 and 1073.

URINARY incontinence is a common condition affecting more than a third of adult women.[1] Stress urinary incontinence represents the most prevalent subtype of urinary incontinence in women.[1] SUI can negatively influence quality of life.[2] In fact, this decline in quality of life is the main reason women with SUI seek surgical treatment.[2]

Since its introduction, sling procedures have replaced traditional repairs for SUI such as Burch colposuspension due to their efficacy, low rates of complications and morbidity, and short learning curve. Currently

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sling procedures outnumber other surgical treatments for female urinary incontinence. Indeed, approximately 90% of all incontinence operations in the United States in 2009 were performed using slings and their use continues to increase.[3]

Synthetic mid urethral slings currently represent the first line surgical treatment for female SUI. The retropubic approach involves passing a sling from the mid urethra through the space of Retzius, leading to a risk of bladder perforation and hematoma. This led to creation of the transobturator approach, in which trocars are placed through the obturator foramen, minimizing the risk of injury to the bladder but increasing the potential for neurovascular injury in that space.

Previously published meta-analyses have included nonlevel I trials, heterogeneity of sling types (macroporous as well as microporous) and studies with limited followup data. In this study we assess the efficacy and complications associated with RMS and TMS for the treatment of SUI using level I data in patients treated with type 1 sling material with a minimum followup of 1 year.

MATERIALS AND METHODS

To assess the clinical efficacy and safety of the RMS and TMS procedures, a MEDLINE search from 1996 to January 2014 was conducted for RCTs using the keywords "retropubic sling," "transobturator sling," "TVT," "TOT," "TVT-O," and "stress urinary incontinence" for English language articles. Reference lists from included studies and previous reviews were also examined. Articles were limited to humans, gender (female).

Inclusion criteria consisted of RCTs comparing retropubic (bottom-up or top-down) vs transobturator (inside-out or outside-in) type 1 slings (macroporous, monofilament) in patients with pure SUI or predominantly SUI, with a minimum followup of 12 months (fig. 1). Exclusion criteria consisted of nonlevel I studies, abstracts, studies encompassing predominantly mixed urinary incontinence cohorts (ie urgency-predominant), a followup duration of less than 12 months, and studies with type 2 (microporous) and type 3 (macroporous, multifilament) slings or mini slings.

RCTs were not restricted to a minimal required number of participants. In the case of reports from the same data sets, only the study providing the longest followup was included. Three authors (SS, MAL, RKL) each independently assessed study eligibility. Conflicts were reconciled via discussion among the authors until consensus was reached. Data abstraction was also independently performed by the same authors to confirm accuracy.

A total of 34 RCTs comparing retropubic vs transobturator slings were identified. Of these RCTs 13 were excluded from analysis as they did meet study selection criteria (supplementary Appendix 1, http://jurology.com/).

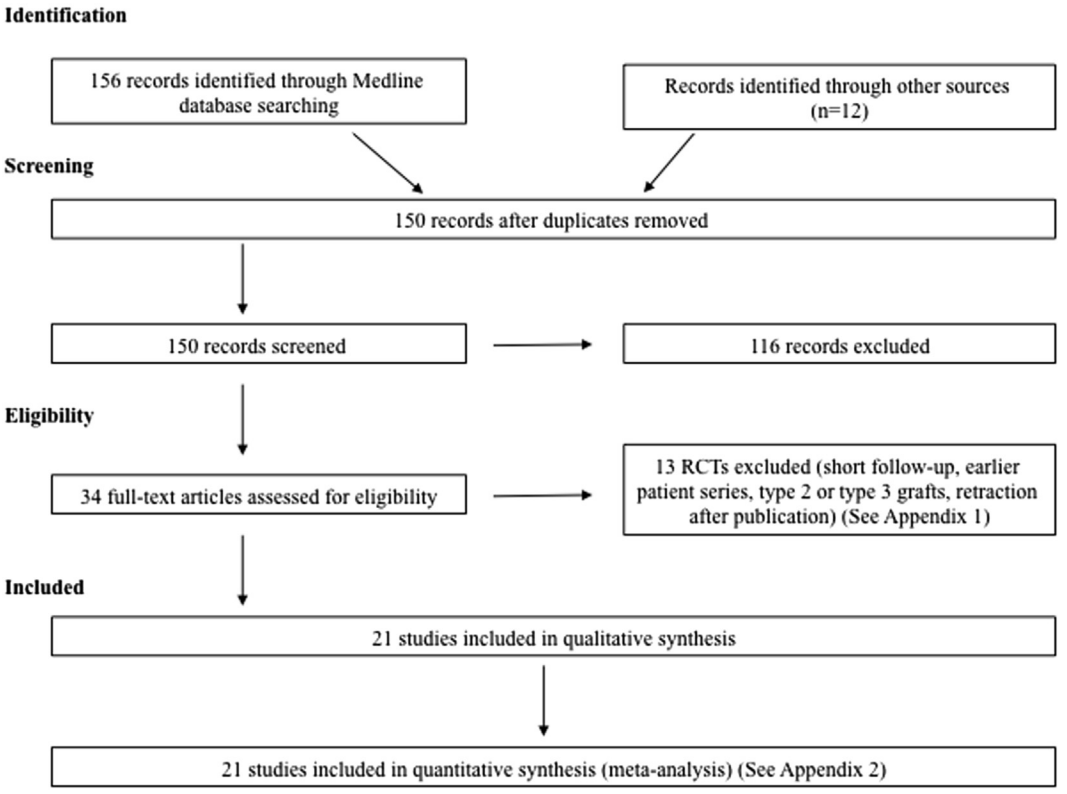

Figure 1. Full electronic search strategy