Effectiveness of midurethral slings in mixed urinary incontinence: a systematic review and meta-analysis

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CRD summary
The review concluded that there was evidence of a persistently good cure of the stress component in women with mixed urinary incontinence following mid-urethral slings; cure of the urge component was variable. The review was generally well conducted, but variable cure definitions and a lack of good quality evidence for some outcomes limit the reliability of the authors’ conclusions.

Authors' objectives
To evaluate the effectiveness of mid-urethral slings in women with mixed urinary incontinence.

Searching
MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials (CENTRAL), National Library for Health and mRCT databases and Google Scholar were searched to June 2010 for articles in any language. Search terms were reported. Reference lists of relevant articles were searched.

Study selection
Randomised controlled trials (RCTs) and prospective studies of mid-urethral slings in women with urodynamically or symptomatic mixed urinary incontinence were eligible for inclusion. Definitions were provided in the review. Trials had to report the cure rate of both stress and urge components of mixed urinary incontinence.

The included trials studied various mid-urethral slings, such as transobturator vaginal tape, outside-in transobturator tape, inside-out transobturator vaginal tape and suprapubic arch sling in women aged 29 to 84 years. The comparators were other types of mid-urethral sling. Most studies were based on symptomatic diagnosis of mixed urinary incontinence.

Two reviewers independently performed study selection. Disagreements were resolved by discussion or consultation with a third reviewer.

Assessment of study quality
Trial quality was assessed using the Jadad scale of randomisation, blinding and full accounting of all patients to give a maximum score of 5. Prospective cohort study quality was assessed using the Newcastle-Ottawa Scale.

Two reviewers independently performed quality assessment.

Data extraction
Data were extracted on subjective cure outcomes and used to calculate odds ratios (OR) with 95% confidence intervals (CIs). Intention-to-treat data were used where possible. Trial authors were contacted for missing data.

Two reviewers independently performed data extraction.

Methods of synthesis
Random-effects meta-analysis was used to calculate pooled odds ratios and 95% CIs. Statistical heterogeneity was assessed with I² and X².

Results of the review
Thirteen studies (2,693 participants) were included in the review: six RCTS and seven prospective cohort studies. Trial quality ranged from 2 to 4 on the Jadad scale.

The overall subjective cure rate with mid-urethral slings was 56% (95% CI 46 to 70%; seven cohort studies), although significant statistical heterogeneity was detected. There was no statistically significant difference in the rate of
subjective cure with transobturator vaginal tape versus outside-in transobturator tape/inside-out transobturator vaginal tape (OR 0.90, 95% CI 0.63 to 1.27; five RCTs). There was no significant difference in subjective cure with transobturator vaginal tape versus outside-in transobturator tape in women with no detrusor overactivity (OR 1.21, 95% CI 0.70 to 2.08; two RCTs).

The cure rate of the stress component ranged from 85% to 97%. The cure rate for the urge component was 30% to 85% and showed a decline over time.

**Authors' conclusions**

There was evidence of a persistent and good cure of the stress component following mid-urethral slings in women with mixed urinary incontinence; the cure of the urge component was variable.

**CRD commentary**

Inclusion criteria for the review were clearly defined. Several relevant data sources were searched. There were no language restrictions. Publication bias was not assessed and could not be ruled out. Attempts were made to reduce reviewer error and bias throughout the review process. Quality assessment indicated that the quality of the included studies was variable. Trials were combined using standard statistical methods. Statistical heterogeneity was assessed. The authors acknowledged that definitions of cure varied across studies. Some of the outcomes were based on a small number of studies.

The review was generally well conducted, but variability in cure definitions, a lack of evidence for some outcomes and the poor quality of some studies limits the reliability of the authors’ conclusions. The authors’ call for further research appears warranted.

**Implications of the review for practice and research**

**Practice:** The authors stated that there was insufficient evidence to suggest the best type of sling for mixed urinary incontinence patients. Treatment should be individualised and based on urodynamic findings.

**Research:** The authors stated a need for a good quality RCTs to evaluate the effectiveness of mid-urethral slings versus conservative treatment in women with mixed urinary incontinence. A reproducible symptom assessment tool that was robust enough to reflect subtle changes in contributing symptoms was desirable in future studies. Further studies were needed to determine the effects on surgical outcomes of urodynamically proven detrusor overactivity in mixed urinary incontinence. Studies should be powered to enable the identification of any patient and/or surgical variables responsible for higher overall cure/improvement rates in mixed urinary incontinence.

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