

## LAPAROSCOPIC COLPOSUSPENSION AND TENSION-FREE VAGINAL TAPE (TVT): A SYSTEMATIC REVIEW

### Hypothesis / aims of study

To provide a comparison of the effectiveness of, two minimal access surgical techniques, laparoscopic colposuspension and tension-free vaginal tape (TVT), for the treatment of urodynamic stress incontinence (USI).

### Study design, materials and methods

Randomised and 'quasi-randomised' trials in women with USI, including both laparoscopic surgery and TVT in the arms of the trial, were identified from the Cochrane Incontinence Review Group's Specialised Register of Controlled Trials. The most recent search was September 2005. Evaluation for methodological quality and appropriateness for inclusion by the reviewers was performed using the Incontinence Group's assessment criteria [1]. The outcomes measured were: subjective cure, objective cure, quality of life measurements, surgical outcomes and health economic measures. All trials were evaluated independently by at least two reviewers and data extracted separately. When appropriate, meta-analysis was undertaken using the Cochrane Collaboration RevMan software to calculate the pooled estimates (relative risk [RR] or weighted mean difference [WMD]) and their 95% confidence intervals (CI).

### Results

Seven trials were included in the review, giving a total of 264 women undergoing laparoscopic colposuspension and 290 TVT. All participants had urodynamic diagnosis of stress incontinence however the inclusion and exclusion criteria varied in other aspects. The laparoscopic colposuspensions were performed using two non-absorbable sutures in all but one study, which used a polypropylene mesh instead. All studies reported data within 18 months following surgery. Overall there was no statistically significant difference in the reported subjective cure rate between laparoscopic colposuspension and TVT within 18 months (Figure 1). Within the same time period, the overall objective cure rate was statistically significantly lower for laparoscopic colposuspension when compared to TVT (Figure 2). Urodynamic investigations were used to assess cure objectively in only three studies and showed no statistically significant difference when laparoscopy was compared to TVT (RR 0.91, 95% CI 0.80 to 1.03). Laparoscopic colposuspension when compared to TVT showed no statistically significant difference in both the rates of de novo detrusor overactivity (RR 0.80, 95% CI 0.34 to 1.88) and voiding dysfunction (RR 1.19; 95% CI 0.50 to 2.81) within 18 months, however the numbers in each of the groups with this outcome were small. Six studies reported the number and type of perioperative complications and showed no statistically significant differences in the rates between laparoscopic colposuspension and TVT (RR 1.07, 95% CI 0.64 to 1.79). Out of a total of 24 perioperative complications reported in the TVT group, 42% (10/24) were due to bladder injuries or perforations; compared with only 17% (4/23) in the laparoscopic colposuspension group. Meta-analysis of the operation time and the length of in-patient stay showed that laparoscopic colposuspension took statistically significantly longer to perform (Mean difference 21 minutes, 95% CI 17 to 25) and TVT had a shorter hospital stay (Mean difference 0.98 days, 95% CI 0.66 to 1.31). Four trials assessed quality of life as an outcome. These studies each used a varying number of validated questionnaires and reported the data in different ways not allowing the results to be combined. Similarly, the trials reporting hospital and procedural costs were unsuitable to be combined due to both varying currency and differing structural health care systems.

Figure 1 Subjective cure within 18 months

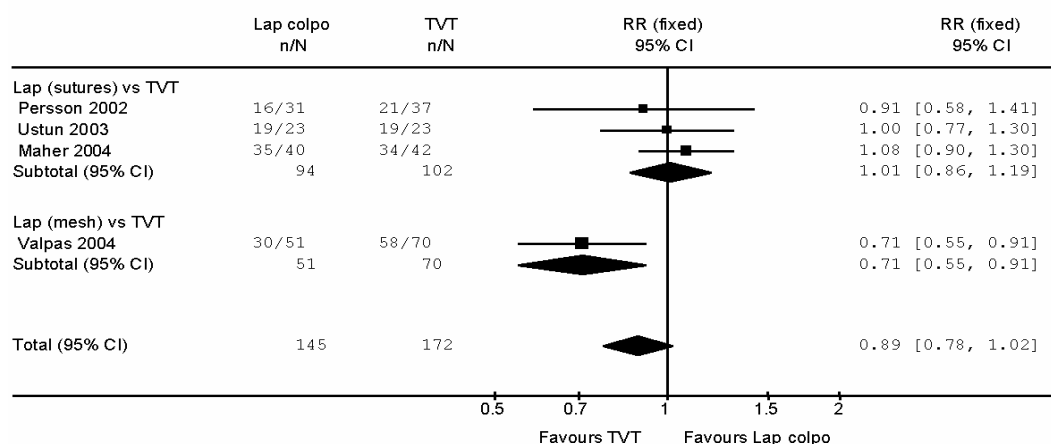
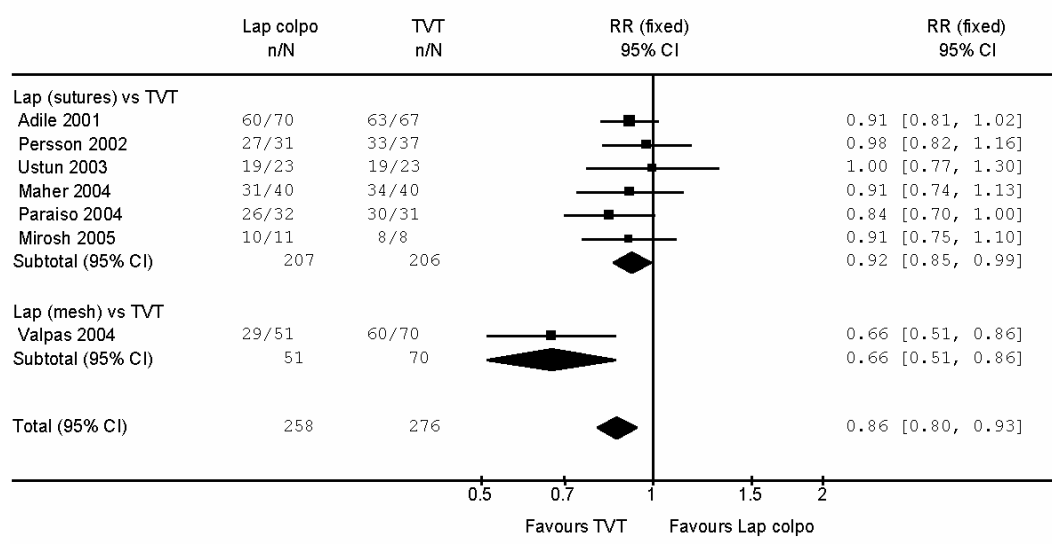


Figure 2 Objective cure within 18 months



### Interpretation of results

All seven included trials were of generally good quality although small and had less than 70 participants in each surgical arm. The definitions and assessment methods of both subjective and objective cure did differ across the studies and could account for the variable rates reported. The subjective cure rates within 18 months are equally good for both of these minimal access techniques. However, the objective cure rates, within the same time period, appear to be in favour of the TVT. Although the two operations were similar with regards to the number of perioperative complications, bladder injuries were commoner in the TVT procedures. This is not surprising as there is blind placement of the TVT needle and apart from extra days of catheterisation there have been no documented long term problems with TVT needle perforation. The complications within the laparoscopy group could be thought to be more serious. The TVT procedure, however, is quicker to perform by about 20 minutes, and has a shorter hospital stay by one day, when compared to laparoscopic colposuspension. Although these benefits are statistically significant they may not be of particular clinical importance to the patient, however they are more likely to be of economic importance to health systems.

### Concluding message

The evidence so far appears to be in favour of the TVT as the minimal access technique for USI, however long term data is needed. Further well designed trials with standardised outcomes are required before accurate conclusions can be drawn from this comparison.

### References

1. Cochrane Handbook for Systematic Reviews of Interventions 4.2.5; Oxford, May 2005.

**FUNDING: NONE**

**DISCLOSURES: NONE**