

## LONGTERM IMPROVEMENT IN VOIDING AFTER TVT PLACEMENT

### Aims of Study

The TVT is an anti- incontinence procedure that has been shown to significantly reduce maximum flow rate and maximum flow rate centiles. At least part of its success seems due to urethral obstruction. In a prospective study, we evaluated voiding function with the help of a detailed interview, independent flowmetry and estimation of residual urine volumes by ultrasound or catheterization.

### Methods

145 women took part in an ongoing yearly clinical audit of TVT placement. 108 of those have now been seen at least twice after TVT placement. A standardized interview was undertaken which focused on symptoms of voiding dysfunction such as hesitancy, poor stream, stop-start voiding, the need to strain and incomplete emptying and also asked whether the patient had suffered any urinary tract infections (diagnosed by a medical practitioner) within the last 12 months. After a clinical stress test, the patient was asked to void for free flowmetry using a weight transducer flowmeter (Life Tech Micro Flow). Residual urine was determined either by translabial ultrasound, using a formula originally developed for transvaginal scanning (1) or, in cases of ultrasound estimates over 100ml, by catheterization.

### Results

The first flowmetry was undertaken on average 0.62 (0.2- 1.8) years, the last on average 2.63 (1- 4.5) years after TVT surgery. The interval between first and last void was 2.02 years on average. There was a significant increase in maximum flow rate centiles (20.07 (SD 20.83) to 24.92 (SD 23.94),  $p= 0.021$ ). This increase appeared to be close to linear over time when all flow rates obtained in the audit to date were analysed by ANOVA (see Fig. 1). Voided volumes decreased nonsignificantly, not the least due to a reduction in very large volumes (314 (SD 224.1) vs. 274 (SD 168.6) ml,  $p= 0.11$ ). Residual volumes decreased highly significantly (80.7 (SD 116.7) vs. 45.7 (SD 55.6) ml,  $p< 0.001$ ).

Year	N	Mean	StDev	---+-----+-----+-----+-----
Preop.	113	49.66	32.45	(---*---)
1st year	114	22.86	23.56	(---*---)
2nd year	88	23.12	21.28	(---*---)
3rd year	63	26.36	23.89	(---*---)
4th year	34	27.99	27.65	(-----*-----)
5th year	9	27.99	30.38	(-----*-----)
				---+-----+-----+-----+-----
				12 24 36 48 centiles

Fig. 1: ANOVA analysis of maximum flow rate centiles before and after TVT placement.

When the incidence of symptoms of voiding dysfunction was assessed over time, GEE modelling showed improvements in the symptoms of 'poor stream' ( $p= 0.024$ ), 'straining to void' ( $p= 0.038$ ) and 'incomplete emptying' ( $p= 0.019$ ). 'Hesitancy' and 'stop- start voiding' showed no such reduction over time. However, a highly significant relationship was found between length of followup and the likelihood of UTI's reported for the 12 months prior to last followup ( $p< 0.001$ ), with an increase from 8% in the first postoperative year to 18% in the second year, 28% in the third year, 20% in the fourth and 33% in the fifth year after TVT (see Fig. 2).

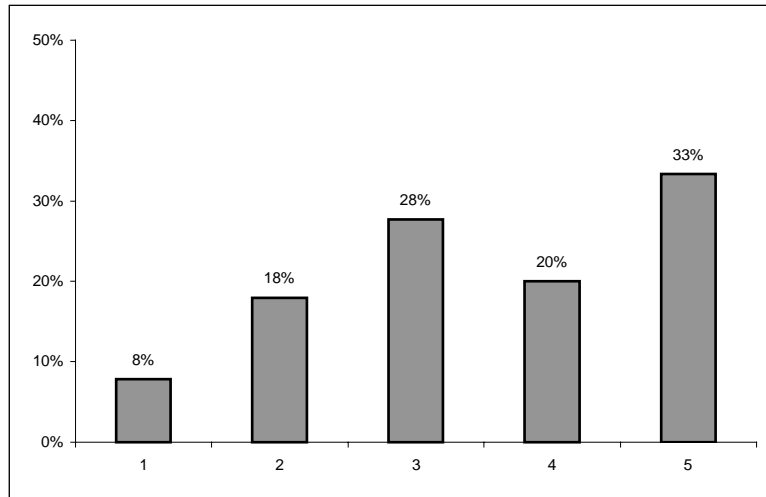


Fig. 2: Patients reporting urinary tract infections over the last 12 months versus year of followup ( $p < 0.001$  on GEE modelling).

### **Conclusions**

The TVT is an obstructive procedure. A highly significant drop in flow rates and flow rate centiles after TVT has previously been demonstrated by the authors and others (2,3). From the data obtained in this study, it appears that there subsequently is an almost linear improvement in voiding after TVT which seems to continue over at least four years. This improvement is manifest in reduced residual urine volumes, normalized voided volumes and increased maximum flow rate centiles. This is also reflected in significant reductions in symptoms of voiding dysfunction over time.

It is disappointing that, despite evident improvement in postoperative voiding function, urinary tract infections seem to become more prevalent over time. A number of potential confounders could have influenced the reported incidence of infections, not the least the patients' hormonal status. Nevertheless, this disturbing finding will have to be investigated further.

### **References**

- 1 Br.J.Urol. 1989;63:149-51.
- 2 Int. Urogyn. J. 2002; 13: S21
- 3 BJU International 2002;89:694-98.