

## THE SOMATIC AND AUTONOMIC INNERVATION OF THE CLITORIS; PRELIMINARY EVIDENCE OF SEXUAL DYSFUNCTION AFTER MINIMAL INVASIVE SLINGS

### Hypothesis / aims of study

Vaginal sling procedures may have a negative effect on sexual function due to damage to vascular and/or neural genital structures. [1] Even though autonomic innervation of the clitoris plays an important role in female sexual function, most studies on the neuroanatomy of the clitoris focus on the sensory function of the dorsal nerve of the clitoris (DNC).[2,3] The autonomic and somatic pathways in relationship to sling surgery have up to the present not been described in detail. The aim of this study is to reinvestigate and describe the neuro-anatomy of the clitoris, both somatic and autonomic, in relation to vaginal sling procedures for stress urinary incontinence.

### Study design, materials and methods

Serially sectioned and histochemically stained pelvises from eleven female foetuses (10-27 weeks of gestation) were studied and three-dimensional reconstructions of the neuro-anatomy of the clitoris were prepared. Furthermore, fourteen adult female hemipelvises were dissected, after a TVT (7) or TVT-O (7) procedure had been performed. Main outcome measures were a 3-D reconstruction and measured distance between the clitoral nerve systems and TVT/TVT-O.

### Results

The DNC originates from the pudendal nerve in the Alcock canal and ascends to the clitoral bodies. In the dissected adult pelvises, the distance of the TVT-O to the DNC had a mean of 9 mm. (Figure 1) The cavernous nerves originate from the vaginal nervous plexus and travel the 5 and 7 o'clock positions along the urethra. There, the autonomic nerves were found to be pierced by the TVT-needle. (Figure 2) At the hilum of the clitoral bodies, the branches of the cavernous nerves medially pass/cross the DNC and travel further alongside it. Just before hooking over the glans of the clitoris, they merge with DNC.

### Interpretation of results

The DNC is located inferior of the pubic ramus and was not disturbed during the placement of the TVT-O. However, the autonomic innervation of the vaginal wall was disrupted by the TVT procedure, which could lead to altered lubrication-swelling response.

### Concluding message

This study is one of the first to illustrate, in detail, both the somatic and autonomic pathways of the clitoris and link these results directly to medical practice. The results of this study illustrate that the retropubic technique clearly disrupts the nervous system to the clitoris and that the obturator technique does not.

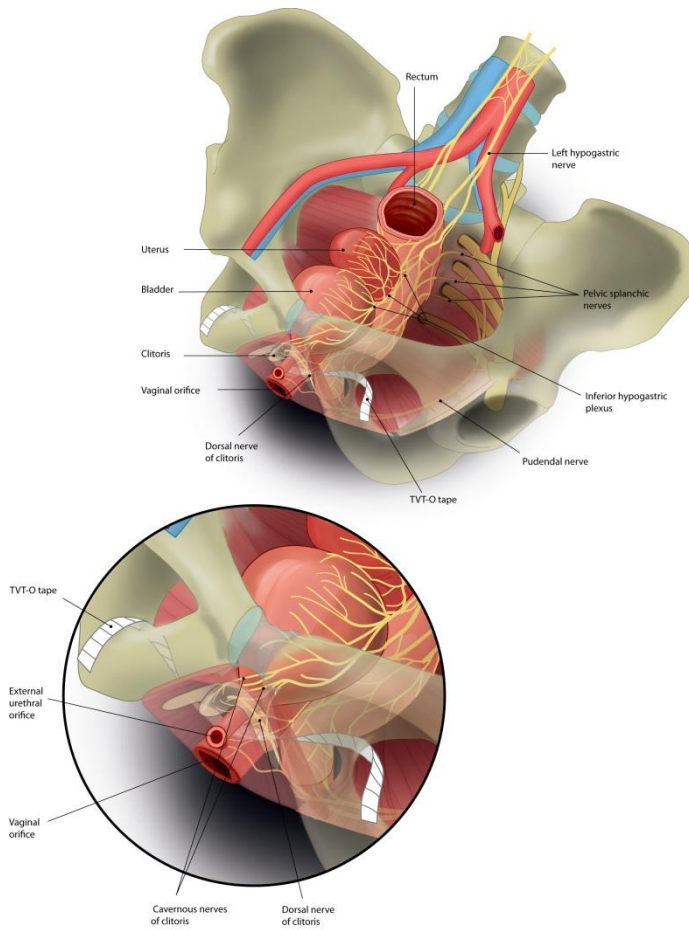


Figure 1

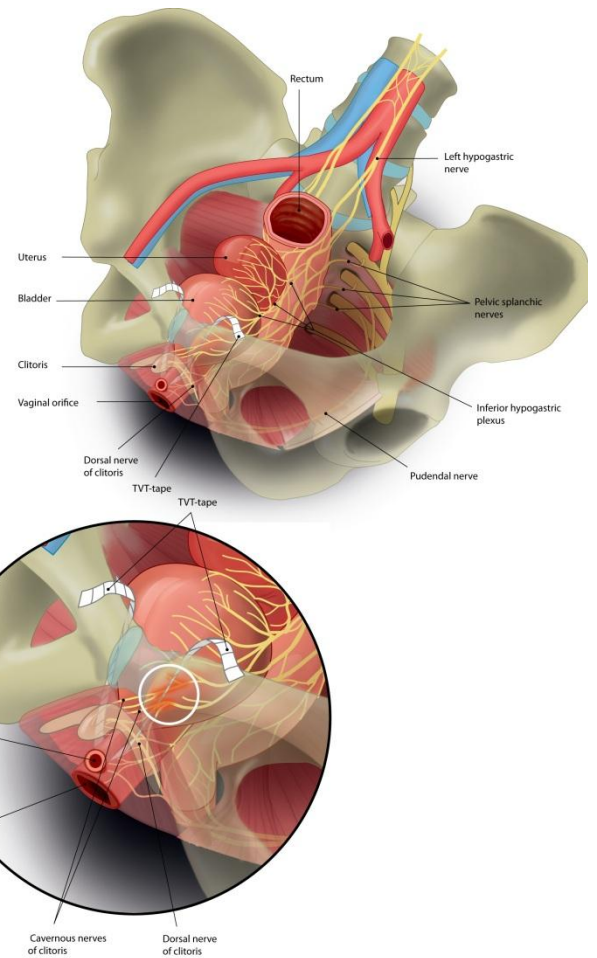


Figure 2

**References**

1. Lowenstein L. Topographic relation of mid-urethral sling for stress incontinence to critical female genital structures. *J Sex Med* 2009 November;6(11):2954-7.
2. O'Connell HE, Hutson JM, Anderson CR, Plenter RJ. Anatomical relationship between urethra and clitoris. *J Urol* 1998 June;159(6):1892-7.
3. O'Connell HE, Sanjeevan KV, Hutson JM. Anatomy of the clitoris. *J Urol* 2005 October;174(4 Pt 1):1189-95.

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