

## **ANATOMICAL CONDITIONS OF MINIMALLY INVASIVE TREATMENT FOR STRESS URINARY INCONTINENCE USING TRANSOBTURATOR VAGINAL TAPE INSIDE-OUT**

### Hypothesis / aims of study

The wide use of retro-pubic tension free suburethral slings for the treatment of stress urinary incontinence has been associated with various peri- and postoperative complications. To reduce these complications, particularly with high risk patients, such as those who have been operated on before in the lower pelvis, an alternative approach using transobturator passage of the tape has been developed.

The aim of this study was to present the relevant anatomical conditions of the lower pelvis on the basis of corpse dissections after Transobturator Vaginal Tape Inside-Out (Gynecare TVT-O, Ethicon Inc., Somerville, NJ) placement using the technique described by De Leval in 2003 (1). Precise anatomical knowledge of the operating field allows the surgeon to conduct the operation safely, which contributes to a reduction of perioperative complications.

### Study design, materials and methods

In order to make visible the anatomical structures through which the tape runs, anatomical dissections of corpses were performed after TVT-O placement. The surgical procedure for the implantation of the TVT-O in the corpses was identical to operations performed on patients with stress urinary incontinence following De Leval's technique.

Bodies donated for research and medical education to the Institute of Anatomy were used. For this study the corpses were preserved with alcohol-glycerol. This preservation technique maintains tissue properties and allows the legs to be positioned in hyperflexion.

### Results

According to the technique as described by De Leval we introduced the tape into the pelvic floor of the corpse. The tape was passed through the obturator foramen along the upper third of the ramus inferior of the pubic bone. Passing through the obturator foramen the tape penetrates the internal obturator muscle and the obturator membrane. It continues through the external obturator muscle and the adductor muscles of the thigh, namely the musculus gracilis and the musculus adductor brevis. The tape is not visible in the Retzius space. The tape remains covered by the fasciae of the internal obturator muscle, so that it doesn't access the lower pelvis at any time.

### Interpretation of results

The transobturator vaginal tape inside-out was described by De Leval in 2003 (1) as a simple and effective procedure for the treatment of female stress urinary incontinence. Until now no anatomical dissections of the position of the transobturator vaginal sling inside-out (TVT-O) have been published. So far the exact determination of the position of the implanted tape was neither possible with computer-assisted tomography nor nuclear resonance scanning on patients or corpses.

In comparison with the outside-in transobturator technique (Uratape, Obtape, Monarc) as described by Delorme (2), the TVT-O method allows the passage of the needle with the tape attached through the obturator foramina from inside to outside. In this way the TVT-O technique can avoid damage to the urethra and the bladder.

With this novel surgical technique for the treatment of female stress urinary incontinence it is possible to reduce the peri- and postoperative complications associated with the widely used retro-pubic tension free suburethral slings. The anatomical dissections showed that if the transobturator tape is placed from the inside to the outside it does not reach the lower pelvis so that the risk of injury to the bladder, the epigastric vein and the external iliac vein is non-existent. In contrast, those injuries can occur if the tape is placed through the retropubic space.

### Concluding message

Anatomical dissection shows that the transobturator inside-out tape does not enter the retropubic space at any time during the procedure, so that injuries to the bladder, the pubic vein and the external iliac vessels do not occur.

1. de Leval J (2003), Novel surgical technique for the treatment of female stress urinary incontinence: transobturator vaginal tape inside-out. *Eur Urol*, 44(6): 724-30.
2. Delorme E (2001), La bandelette trans-obturatrice: un procede mini-invasif pour traiter l'incontinence urinaire déffort de la femme., *Progres en Urologie*, 11: 1306-1313.