The electronic modular artificial urinary sphincter ARTUS: Results of the cadaver study

Dahlem R (1), Reiss P (1), Becker A (1), Fisch M (1), Wieland M (2)
(1) Department of Urology, University Hospital Eppendorf, Hamburg; Germany
(2) Myopowers Medical Technologies SA, Lausanne; Switzerland

INTRODUCTION
The AMS 800® artificial urinary sphincter is considered to be the gold standard in the treatment of severe stress incontinence. However, the permanent pressure on the urethra can result in severe complications, i.e. tissue atrophy with recurrence of the stress incontinence or urethral erosion. A new electronic device which can compress successive parts of the urethra intermittently can reduce these risks. Aim of this study was to perform usability tests in cadavers.

MATERIALS AND METHODS
Between 05-06/11 we implanted the prototype of the electronic modular system ARTUS in 6 cadavers (3 males, 3 females) with different BMI. The cuffs were implanted by a perineal midline incision. The cuffs were located in the penobulbar urethra in male and in the proximal urethra in female cadavers. The power supply and the control units were implanted in the right lower abdomen, therefore we performed a subcutaneous pouch. The guiding wires were passed lateral to the spermatic cord to the cuffs. After this step the system was connected. The cuff size and the length of wires were measured, the localisation of control and power supply units were documented.

RESULTS
The implantation of the new artificial sphincter device is performed easily by the same technique as in the AMS 800®. One difference is the passing of the wires from the lower abdomen to the perineum. The mean operation time was 20 min (17-28 min). The cuff size was 4.5 cm in male and 6 cm in female cadavers. The average length of the guide wires was 12 cm (10.5 -14 cm). The subcutaneous pouch for the power supply and the control units has to be bigger than the space for the tubes of the AMS 800®. There is no difference in implantation in cadavers with low, middle and high BMI.

CONCLUSIONS
Our results demonstrates that the new sphincter ARTUS can be implanted easily in cadavers. The technique is almost the same as for the AMS 800® sphincter system. The differences to the AMS 800® is the passing of the wires and the bigger subcutaneous space. According to the BMI only the length of the guide wires shows a difference. The results of the cadaver study show the usability of the new sphincter ARTUS.