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CATHETERLESS LONG-TERM AMBULATORY URODYNAMIC MEASUREMENT USING A NOVEL THREE-DEVICE SYSTEM

Hypothesis / aims of study
Long-term urodynamics are required because bladder-emptying disorders are often not clearly revealed by conventional urodynamics. Patients with severe clinical overactive bladder symptoms, for instance, often show normal results. This may be due to the short evaluation time and psychological factors that complicate conventional urodynamics. This study aimed to develop an ambulatory three-component urodynamic measurement system that is easy to operate, registers urodynamic parameters for several days, and has no negative impact on the patient.

Study design, materials and methods
We developed an intravesical capsule combined with a hand-held device to register voiding desire and micturition, and an alarm pad device that detects urine loss. Recently, the intravesical capsule and its proven function were detailed in the literature. Here, we present detailed in vitro results using a female bladder model. The flexible capsule was C-shaped to minimize the risk of expulsion from the bladder during micturition. Results of biocompatibility evaluation of the intravesical capsule, which is called Wille Capsule (WiCa) are described.

Results
The WiCa with an oval nose and a maximum outer diameter of 5.5 mm was easily inserted through a 25-French cystoscope. Removing the WiCa by grasping the nose using the female model with bladder was easily conducted.

Interpretation of results
Expulsion of the WiCa during voiding was avoided through a novel C-shaped device design. Based on in vitro cytotoxicity studies, the capsule is a promising and safe device.

Concluding message
Our novel system is an innovative minimally-invasive tool for accurate long-term urodynamic measurement, and does not require inserting a transurethral catheter.

References
1. 8) Wille S., Tenholte D., Engelmann U.H., A System for Long-term Urodynamic Studies. Eur urol. February 2013
2. (2) Hamacher J., Tenholte D., Muthen N., Schumacher P., Mehner J., Engelmann U., Wille S.: Intravesikales Messsystem zur katheterlosen Urodynamik, ISBN biomedizinische Fachtagung 2012: A new catheterless urodynamics measurement method by using an intravesical capsule. In: Biomedical Engineering / Biomedizinische Technik, 57, (2012)

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