Implantable Bladder Sensors for Long-term Monitoring of Bladder Volume

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Voiding diaries, also called frequency volume charts, are an essential instrument to explore the voiding status of patients with lower urinary tract symptoms (LUTS) and incontinence [1]. Patients record micturition times, voided volume with or without other factors including fluid intake, incontinence, urgency, and urge incontinence over a period of days. This task is associated with patient burden, and increased recording periods decrease patient compliance [2]. Although several electronic voiding diaries have recently been developed and applied to decrease patient burden, the problem persists. Small sensors implanted in the bladder to automatically record pressure and volume and times of voiding may offer a new option for assessment and treatment of LUTS and incontinence.

Several studies have described the development of implantable bladder sensors to monitor real-time functional changes [3,4]. In this issue of *International Neurourology Journal*, Dakurah et al. [5] introduce several types of implantable bladder sensors and discuss specific issues regarding hermeticity, biocompatibility, telemetry, drift, power transfer, and compatibility with medical imaging tools such as computed tomography and magnetic resonance imaging. Although an unmet clinical need might enable medical device development, we clinicians should understand from an engineering viewpoint the possible improvements and emerging trends in the design of implantable bladder sensors

that may overcome the current issues [6].

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