

## **REPRODUCIBILITY OF UROFLOW MEASUREMENT: CONVENTIONAL VERSUS SONOUROFLOWMETRY –A NEW E–METHOD FOR ASSESING VOIDING DYSFUNCTION**

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**Introduction:** With more than 2 billion cell phones across the world, mobile technology offers powerful new platforms to be used in modern healthcare. Here we test a novel e–method –sonouroflowmetry –that uses telectronic circuitry and web technologies to screen and assess patients with voiding dysfunction.

**Objectives:** The aim of our study was 1) to compare test–to–test variability between new and gold standard uroflowmetry and 2) to determine if simple sound recording of micturition could be used in modern urodynamics and patient’s care.

**Methods:** Total of 12 healthy male volunteers (age 21 to 46 years) were investigated. The standard uroflowmetry testing was performed at the urology office mimicking outpatient clinic appointments scheduled on demand. Sonouroflowmetry recordings were performed subsequently from participants’ home using personal cell phones when physiologically ready. Variability in test results obtained by standard uroflowmetry (Urodyn 1000, Laborie) and sonouroflowmetry (processed audio signal converted into graph) were calculated from five urograms per method and participant. Voided time, maximum flow rate, time to maximum flow and the flow curve patterns were evaluated. Data were analyzed using Box–and–whisker plot allowing detailed examination of variability between two data sets.

**Results:** Urine flow curves were normal in 98.9% and 100% comparable in both testing methods. One or two initial sonouroflow curves containing artifactual spikes were excluded. One patient, in whom none of the sonouroflow curves was interpretable, was excluded from the study. Decrease of 30% or more in voiding time, time to maximum flow and maximum flow intraindividual variation was observed with sonouroflowmetry. Mean values for both voiding time and time to maximum flow recorded on demand (standard uroflowmetry) were significantly greater ( $26.48\pm 7s$  and  $9.03\pm 1.5s$ ) than those ( $18.82\pm 2.5s$  and  $5.97\pm 1.2s$ ) recorded from home (sonouroflowmetry). There was a close relationship between the mean maximum flow values and mean average flow values from the office and from home. The approach for data entry and acquisition of the test results were well accepted.

**Conclusions:** The study showed that sonouroflowmetry is simple, reliable and easy to adapt. Improved acquired data suggest sonouroflowmetry could lead to enhanced diagnostic along with simplifying and improving workflow efficiency in health care.

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