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Title (type in CAPITAL LETTERS, leave one blank line before the text)	NON-INVASIVE URODYNAMICS BEFORE AND AFTER TURP IN PATIENTS WITH LUTS

AIMS OF STUDY

The ICS provided a nomogram to objectively diagnose BOO using an invasive technique. In previous studies, it was shown that such a nomogram can also be made by plotting the pressure measured non-invasively in an external condom catheter versus the maximum flow rate [1, 2]. The accuracy of this nomogram was found to depend on the degree of obstruction [3]. In the present study, we evaluated patients before and after a TURP using this non-invasive technique

METHODS

In 16 patients, aged 66 ± 10 years (mean \pm SD), who underwent a TURP, we non-invasively measured the bladder pressure and the flow rate in 2 separate voidings. With the exception of 2 patients, invasive urodynamics was not done. Each patient was asked to drink half a litre of water and to void twice one day before the TURP. We first measured the maximum free flow rate. In the second measurement, we used a remotely controlled valve to interrupt the flow rate through an external condom catheter [3]. During this interruption, we measured the maximum isovolumetric bladder pressure in the condom. This pressure value was plotted versus the maximum free flow rate. Note that this type of classification is different from the ICS-nomogram, which is based on the detrusor pressure at maximum flow rate and the maximum flow rate. Both measurements were repeated six weeks after surgery.

RESULTS

None of the 16 patients felt uncomfortable during the measurements. Before the operation, 2 patients only did a free voiding because voiding was painful and in 1 patient the pressure measurement failed due to leakage. After the operation, 5 patients were excluded (2 were incontinent, 2 still had painful wounds and 1 practised self-catheterisation). Table 1 summarises the results of both series of measurements. The maximum pressure in the condom, $p_{LUT\ MAX}$, was plotted versus the maximum free flow rate, Q_{MAX} , in fig. 1. The thin lines connect the measurements before and after the TURP in the same patient. In 1 patient, the flow rate and the condom pressure remained the same after the operation (1), implying that this patient voided with a weakly contracting bladder.

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In 1 patient, both the free flow rate and the condom pressure increased enormously (2). This patient voided intermittently before the operation, which led to an unreliable pressure reading in the condom. After the operation, the free flow rate of this patient was improved and a higher condom pressure was measured. In the remaining 6 patients, the maximum free flow rate increased on average 170% and the condom pressure 20% after the TURP. The slightly higher pressure values after a TURP do not reflect a change in bladder properties, but result

from a better coupling between bladder and condom due to the dramatically increased flow rate. This confirms our earlier finding that the accuracy of the condom catheter method depends on the flow rate [4]. We plotted a classification line (dotted line), which was derived in a previous study based on invasive pressure-flow studies [2]. This line correctly diagnosed 91% of 57 patients in that data set. In the present data, 18 out of totally 21 measurements correctly fell in the obstructed and non-obstructed areas. This seems to validate the classification line as in the present study, with the exception of 2 patients, the decision to operate was not based on non-invasive or invasive tests.

CONCLUSIONS

This preliminary study shows that a non-invasive urodynamic test may be a simple measurement tool to diagnose BOO in patients with LUTS and to evaluate the effect of the treatment.

ACKNOWLEDGEMENT

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REFERENCES

- [1] Neurourol Urodynam **17** 394-395, 1998 [2] Diagnosis of BOO on the basis of non-invasively. Accepted for publication
 [3] Neurourol. Urodynam **18** 455-475, 1999 [4] Neurourol Urodynam **18** 251-253, 1999

Table 1 Results of non-invasive urodynamics in 16 patients before and after TURP

	mean \pm SD	
	Before TURP	After TURP
Q _{MAX} (ml/s)	7.1 \pm 3.4 (n = 16)	17.7 \pm 6.6 (n = 11)
P _{EXT MAX} (cm H ₂ O)	81 \pm 27 (n = 13)	103 \pm 32 (n = 8)

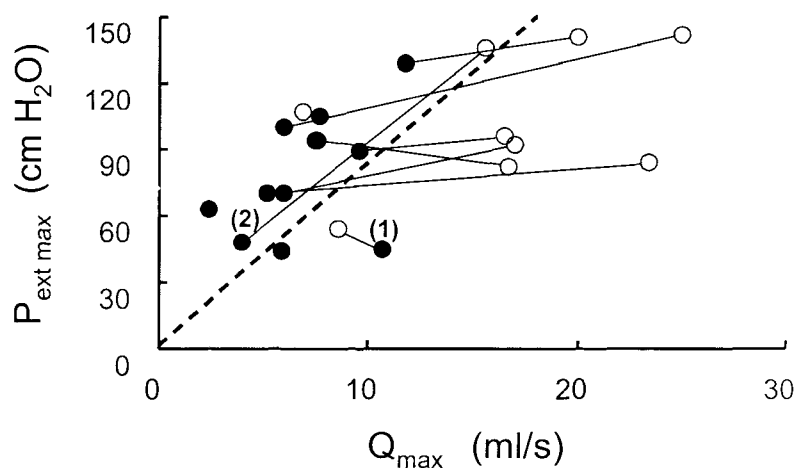


Fig. 1 The maximum condom pressure plotted versus the maximum free flow rate in patients before (closed circles) and after (open circles) TURP