

HYPOTHESIS / AIMS OF STUDY

The role of urodynamics (UDS) in the diagnostic pathway of lower urinary tract symptoms is controversial. Although the surgical indication rate was shown to not be altered in the UPSTREAM trial [1], the additional information obtained from UDS could still be of value and allow for a better counseling and shared decision-making.

We aim to ascertain if UDS prior to surgery for benign prostatic obstruction (BPO) has predictive value for the surgical outcomes. We also aim to analyze if UDS enables the identification of patients who achieve the best benefit from surgical management.

STUDY DESIGN, MATERIALS AND METHODS

We performed a retrospective study by reviewing the clinical records of patients submitted, by the same surgeon, to transurethral incision of the prostate (TUIP) and transurethral resection of the prostate (TURP) for BPO between January of 2018 and December of 2023, in whom an invasive urodynamic study had been done prior to surgery. 48 patients with available follow-up data were identified and included for analysis.

Demographics, clinical variables, uroflowmetry and UDS parameters were collected and analyzed. Patients were categorized according to:

- i. Presence of detrusor overactivity (DO), defined as the occurrence of detrusor contractions during the filling cystometry [2];
- ii. Bladder contractility index (BCI), stratified by cutoffs of <100, 100-150 and >150;
- iii. Bladder outlet obstruction index (BOOI), stratified by cutoffs of <20, 20-40 and >40.

The main outcomes studied were improvement of maximum urine flow rate (QMAX) after surgery, measured in mL/s; and reduction of post-void residual (PVR) after surgery, measured in mL.

RESULTS AND INTERPRETATION

Complete baseline characteristics of our population are presented in table 1:

N= 48	
Surgery	
TUIP, n (%)	6 (12.5)
TURP, n (%)	42 (87.5)
Age, m±SD (years)	63 ± 1.9
Follow-up, md; IQR (months)	20; 19
Prostate volume, md; IQR (mL)	38; 27
PSA, md; IQR (ng/mL)	1.2; 1.05
Pharmacological treatment	
None, n (%)	15 (31.3)
Alpha1-blockers, n (%)	18 (37.5)
5alpha-reductase inhibitors, n (%)	5 (10.4)
Both, n (%)	10 (20.8)
Urinary retention, n (%)	3 (6.3)
Nocturia, md; IQR	3; 3
Weak stream, n (%)	37 (80.4)
Frequency, n (%)	30 (62.5)
Urgency, n (%)	20 (44.4)
QMAX, m±SD (mL/s)	10.7 ± 0.79
PVR, md; IQR (mL)	50; 110
TUIP – transurethral incision of the prostate; TURP – transurethral resection of the prostate; m – mean; SD – standard deviation; md – median; IQR – interquartile range; PSA – prostate specific antigen; QMAX – maximum urine flow rate; PVR – post-void residual	

RESULTS AND INTERPRETATION

R.1 Detrusor Overactivity

DO was identified in 47.9% of the cases (23/48). Presence of DO showed a trend towards a worse QMAX improvement (md: 10mL/s, IQR: 10mL/s vs. md:15mL/S, IQR: 8 mL/s; p= 0,055).

The population was then stratified according to BCI and BOOI. In this sub-analysis, presence of DO showed a trend toward:

- worse QMAX improvement (9.8±2.4 mL/s vs. 18±3.3; p=0.069) and worse PVR reduction (md: +30mL, IQR: 20mL vs. md: -30mL; IQR 98mL; p=0.095) in the subgroup of patients with equivocal obstruction (BOOI between 20-40).
- worse QMAX improvement (md: 9.5mL/s, IQR:10mL/s vs. md:15; IQR: 6mL/s; p=0.088) in the subgroup of patients with a BOOI>40.

R.2 BCI and BOOI stratification

Distribution regarding BCI stratification was:

- i. <100: 52.1% (25/48);
- ii. 100-150: 41.7% (20/48);
- iii. >150: 6.3% (3/48).

A BCI of >150 showed an association with better QMAX improvement (14.4±1.7mL/s vs 11.3±1.3mL/s vs 27.7±7.4mL/s; p=0.004) but no impact in PVR reduction.

Distribution regarding BOOI was:

- i. <20: 25% (12/48);
- ii. 20-40: 35.4% (17/48);
- iii. >40: 39.6% (19/48).

A BOOI of >40 showed a trend toward a better PVR reduction (-17.1±29.6 vs. -22.1± 22.1 vs. -146.5±-46.8; p=0.056) but no impact in QMAX improvement.

R.3 Interpretation

Our results suggest that the diagnosis of secondary DO could impair the outcome of BPO surgery. This finding was also seen in those with equivocal degree of obstruction (BOOI between 20 and 40), a subpopulation of particular interest regarding surgical decision.

In parallel, the degree of bladder contractility and the degree of bladder outlet obstruction previous to surgery showed an association with surgical outcomes. Specifically, a higher bladder contractility (defined as BCI>150) and a higher degree of bladder outlet obstruction (defined as BOOI>40) were associated with better results, therefore suggesting that these patients have the most benefit from surgical management.

CONCLUSIONS

Our results suggest that invasive urodynamic study prior to BPO surgery may enable the identification of patients that derive the most from surgical management and also, other patients in which the improvement from surgery may be inferior than expected. Therefore, UDS is a valuable diagnostic tool in the management of BPO. Nevertheless, the clinical utility of our findings and the extrapolation for routine use must be further studied.

REFERENCES

1. Drake MJ, Lewis AL, Young GJ, Abrams P, Blair PS, Chapple C, et al. Diagnostic assessment of lower urinary tract symptoms in men considering prostate surgery: A noninferiority randomised controlled trial of Urodynamics in 26 Hospitals. European Urology. 2020 Nov;78(5):701–10. doi:10.1016/j.eururo.2020.06.004

2. D’Ancona CD, Haylen BT, Oelke M, Herschorn S, Abranches-Monteiro L, Arnold EP, Goldman HB, Hamid R, Homma Y, Marcelissen T, Rademakers K, Schizas A, Singla A, Soto I, Tse V, de Wachter S. An International Continence Society (ICS) Report on the Terminology for Adult Male Lower Urinary Tract and Pelvic Floor Symptoms and Dysfunction. Neurourol Urodyn. 2019 DOI: 10.1002/nau.23897