

OUTCOMES ANALYSIS OF TREATMENT OF LOWER URINARY TRACTS SYMPTOMS IN MEN

Hypothesis / aims of study

We hypothesize that the severity and specific pathophysiologic derangements causing LUTS are related to treatment outcome. Studies directly comparing the outcome of surgical and medical therapy of LUTS as a function of underlying urodynamic parameters are lacking. Knowledge of relative efficacies of treatments for male LUTS based upon urodynamic and noninvasive clinical criteria will enable practitioners to recommend therapies most likely to succeed in maintaining and improving quality of life while limiting continuation of treatments having minimal benefit. The aims of this study were (1) to compare the effects of 3 different treatments on male LUTS and (2) to evaluate prognostic factors affecting outcome using a newly validated LUTS outcome score that combines objective, semiobjective and subjective parameters.

Study design, materials and methods

This is a prospective pilot study of 60 men who underwent treatment for LUTS and who completed all elements of the following evaluation. Men with overt neurogenic voiding dysfunction or those patients whose evaluations were incomplete were excluded. The study was approved by the Western IRB and sponsored by the Institute for Prostate and Bladder Research. Patients completed a detailed pretreatment (and post-treatment) evaluation consisting of a structured history/physical examination, urinary questionnaire (including IPSS) [2], 24-hour voiding diary, urinalysis and culture, noninvasive free-flow uroflowmetry (Q), post-void residual urine volume determination (PVR), and videourodynamic study (VUDS). 60 men with complete records were retrospectively analyzed. Free-flow measurements were conducted in a private setting using a standard toilet. PVR was measured by ultrasound immediately after bladder emptying. Uroflow and PVR were repeated at least twice to ensure consistency. The highest Qmax and lowest PVR were used for analysis. Multichannel VUDS were performed according to the recommendations of the International Continence Society. Patients were divided according to treatment: alpha blockers alone, combined medical therapy (alpha blockers plus finasteride) and bladder outlet reductive surgery. Additional stratifications included Schaefer obstruction grade (low=0-3, high=4-6), presence or absence of detrusor overactivity or impaired detrusor contractility (Watts factor <10 W/m²). The choice of treatment was usually patient-driven, initial preference given to non-surgical therapy where warranted clinically. Post-treatment, patients completed a detailed clinical assessment consisting of 24 hour voiding diary, uroflow, PVR and IPSS. Additionally, all patients were assessed by independent third-party investigators to evaluate whether the treatment they underwent rendered them cured, improved, or the same/worse (failed) compared to their pre-treatment LUTS status. Elements of well-established questions from the IPSS assessment were then combined with established noninvasive objective determinants of voiding function as well as the subjective patient assessment parameter, to calculate the (recently validated) LUTS outcome score (LOS) [3]. The LOS consists of eight parameters, each assigned a score of 0, 1 or 2. Thus, the LUTS outcome score ranges from 0 (best) to 16 (worst). Comparisons were made between treatment classes and corresponding LOS. The outcomes of all treatments types were then compared as a function of Schaefer obstruction grade, and presence or absence of detrusor overactivity and impaired detrusor contractility. Statistical methods utilized Student's t-test where a p<.05 was considered a priori to be statistically significant.

Results

Table 1 compares the relationship of Schaefer urethral obstruction grade (PURR) with outcome according to treatment type. Outcome of treatment (lower LOS) was best in the surgical group despite much higher pre-treatment obstruction grade. While combined medical therapy appeared to have a better treatment outcome than alpha blockers alone (mean LOS 6.9 vs 8.06 respectively), these differences failed to reach significance (p>.05). Outcome of

treatment (lower LOS) was best in the surgical group (mean LOS=3.92) despite much higher pre-treatment obstruction grade (mean PURR=4.37) than in either pharmacologic group ($p < .05$ in comparing mean LOS of surgical group vs alpha or combined groups).

Table 2 compares the effect of obstruction grade, presence or absence of detrusor overactivity and presence or absence of detrusor weakness on outcome. Patients with higher grade obstruction (PURR=4-6) fared better (LOS=4.3) with all treatments than men with less (PURR=0-3) obstruction (LOS=6.67), $p = .03$. Presence or absence of detrusor overactivity yielded no significant effect on outcome of therapy for any therapy. Men with weaker bladders tended to fare less well (LOS=7.1) than men with normal detrusor contractility (LOS=5.69) though differences were insignificant.

Table 1 (see text for p-values)	alpha	combined	surg
PURR (mean)	2.14	2.15	4.37
LOS (mean)	8.06	6.90	3.92
n	14	13	19

alpha=treatment with alpha blocking agent

combined=combined medical therapy (alpha blocker plus finasteride)

Surg=treatment with surgical bladder outlet reductive procedure

PURR=passive urethral resistance relation (Schaefer obstruction grade 0-6)

LOS=LUTS outcome score (0-16)

Table 2	LOS (mean)	p
PURR 0-3 (n=41)	6.67	0.03
PURR 4-6 (n=19)	4.3	
No detrusor overactivity (n=30)	6.46	0.31
Detrusor overactivity (n=29)	5.36	
Normal detrusor contractility (n=50)	5.69	0.32
Impaired detrusor contractility (n=10)	7.1	

Interpretation of results

The data presented herein strongly suggest that men with high grade prostatic obstruction fare best with surgical prostatic reduction. Presence or absence of detrusor overactivity or impaired detrusor contractility had no significant effect on treatment outcome.

Concluding message

Outcomes analysis such as the present study of treatment of men with LUTS initially characterized by urodynamic studies will enable discrimination of confounding variables such as degree of infravesical obstruction, impaired detrusor contractility and detrusor overactivity and in so doing allow for recommendation of best practice guidelines using multiple types of contemporary treatment options.

References

1. Correlation of American Urological Association Symptom Index with obstructive and nonobstructive prostatism. J Urol 153: 674-680, 1995.
2. Defining Bladder Outlet Obstruction in Benign Prostatic Hyperplasia. AUA Update Series Volume 15: 10-15, 1996.
3. Development and validation of a New treatment Outcome Score for Men with LUTS. Neurourol and Urodyn, 23: 88-93, 2004.

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