

INFLUENCE OF BLADDER CONTRACTILITY ON SHORT-TERM OUTCOMES OF HIGH-POWER POTASSIUM-TITANYL-PHOSPHATE PHOTOSELECTIVE VAPORIZATION OF THE PROSTATE

Hypothesis / aims of study

We determined the effect of the bladder contractility on outcomes of the high-power (80 W) potassium-titanyl-phosphate (KTP) laser vaporization of the prostate in men with lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH)

Study design, materials and methods

Men who were suffering from LUTS due to BPH and failed previous medical therapy with alpha-blockers were included in this study. Inclusion criteria were age older than 50 years and presence of moderate or severe LUTS (International Prostate Symptom Score [I-PSS] >8) or maximum flow rate (Q_{max}) value less than 10 ml/sec.

A total of 46 patients with median age of 68.5 years (range 56 to 86) were included in the primary analysis. All patients were evaluated with the I-PSS questionnaire, urinalysis, Q_{max} determination, post-void residual (PVR) urine volume measurement, digital rectal examination (DRE), serum prostate-specific antigen (PSA) determination, transrectal ultrasonography (TRUS), and a multichannel videourodynamic study with a pressure-flow study (MMS UD-2000, Medical Measurement System, Ennschede, The Netherlands).

KTP laser vaporization of the prostate was performed by a single surgeon in a routine manner. An 80 W KTP laser beam produced by a Laserscope Greenlight PV generator (Laserscope, San Jose, CA) was delivered through a side-deflecting fiber with a 23F continuous-flow cystoscope. On average, 74,000 J (range 22,900 to 222,000) of energy was delivered within 34 minutes (range 9 to 85). No blood transfusions were required. Foley catheters were placed in all patients and removed without complications the next morning, within 24 hours.

Follow-up was at 1, 3, 6 and 12 months. At the 1-month postoperative visit, the I-PSS, Q_{max}, and PVR volume were recorded, as were any complications that may have occurred. The same variables were also obtained at 3, 6, and 12 months postoperatively. Median follow-up was 6 months (range 1 to 15).

Results

None of the patients required continuous bladder irrigation. Mild hematuria was identified in 11 patients (23.9%), which did not require medical attention. Two patients (4.3%) experienced clot retention postoperatively and had catheter successfully removed after 2 weeks. Two patients (4.3%) reported retrograde ejaculation. No other perioperative complications were noted.

Median I-PSS and quality of life (QOL) index decreased from 17 to 11.5 ($P = 0.019$) and from 4 to 3 ($P < 0.001$), respectively. Their median Q_{max} increased from 10 to 15.6 ml/sec ($P < 0.001$) and their median PVR volume decreased from 27.5 to 0 ml ($P < 0.001$). There were no differences in the change of the I-PSS and Q_{max} according to age, prostate volume, and bladder outlet obstruction index (BOOI). The low bladder contractility index (BCI) group (BCI <100) showed no reduction in median I-PSS, while the higher BCI group (BCI \geq 100) showed a significant reduction in median I-PSS ($P = 0.013$). Seventeen patients (63.0%) and 12 (44.4%) in the higher BCI group had a 25% and 50% or greater decrease in their Q_{max}, while 5 (33.3%) and 2 (10.5%) in the low BCI group did ($P = 0.014$ and $P = 0.022$, respectively).

Interpretation of results

The development of the high-power 80 W KTP laser is a further advance in the laser treatment of BPH. It is postulated that the higher power results in faster tissue heating and a more rapid tissue removal by vaporization. To our knowledge, this is the first study to evaluate the effect of baseline bladder contractility on outcomes of the high-power KTP laser vaporization. In the present study, there was no difference in outcomes of KTP laser according to age, prostate volume or the obstruction degree. However, the bladder contractility degree significantly influenced the patient subjective symptoms.

Thomas et al. [1] investigated 224 men with detrusor underactivity, and evaluated the effect of this condition on the outcome of TURP. Because this study found that TURP is not helpful in this condition, the authors underscored their view that reliance on symptoms and uroflowmetry is not enough when patients are being considered for TURP, and recommended routine preoperative urodynamic assessment. Although there are virtually no data evaluating the efficacy of KTP laser vaporization in men with low bladder contractility, men with lower voiding pressures have a less favorable symptomatic outcome after elective TURP [2] since relieving the obstruction surgically does not improve the contractility [3]. Therefore, our results suggest that weak bladder contractility may be a contraindication for KTP laser vaporization and that it should be distinguished from bladder outlet obstruction before surgery.

Concluding message

The present results show that after high-power KTP laser vaporization for weak bladder contractility, despite a clinically irrelevant reduction in obstruction, there are no symptomatic gains in this group, compared with the improvement shown in patients with normal or strong bladder contractility. However, as with any new technique, longer follow-up and

a larger cohort are needed further to validate these findings.

References

1. BJU Int 2004;93:745-50.
2. BMJ 1989;299:762-7.
3. Scand J Urol Nephrol Suppl 2004;215:101-8.

FUNDING: NONE

DISCLOSURES: NONE

CLINICAL TRIAL REGISTRATION: This clinical trial has not yet been registered in a public clinical trials registry.

HUMAN SUBJECTS: This study did not need ethical approval because this study was a retrospective one but followed the Declaration of Helsinki Informed consent was not obtained from the patients.