



To study safety parameters using preoperative Serum sodium, postoperative Serum sodium & preoperative Hemoglobin, postoperative Hemoglobin, urinary incontinence 50 watt Holmium laser

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Abstract

Background: The study population constituted of patients with benign hypertrophy of prostate who attended outpatient department in Department of Urology, The study population comprised of two groups with a total 20 study participants.

Conclusion: The outcomes of the study were operative time, catheterization time, American urological association symptom score, post operative- maximum urinary flow rate, post void residual volume, well being- serum sodium, hemoglobin and post operative side effects between the two groups

Study Design: Hospital based, prospective observational study.

Keywords: Catheterization, Serum Sodium, Holmium Laser, Hemoglobin & Pre Operative.

Introduction

The Ho: YAG laser was introduced for use in a number of urologic conditions. The Ho: YAG laser emits light at a frequency of 2100 nm. The energy is emitted in a series of rapid pulses over a few milliseconds. A flexible optical quartz fiber is required for the laser delivery. Holmium laser produces a cutting effect by vaporization of the tissue water; its hemostatic properties are less than those of the continuous wave lasers. For prostatectomy, 100 W holmium laser energy is used usually frequency. However lower power settings of 60-80 W would increase the operative time. We use 50W Auriga XL laser^{12&7}.

Holmium laser enucleation of the prostate (HoLEP) combined with mechanical morcellation represents the latest refinement of holmium: YAG surgical treatment for benign prostatic hyperplasia (BPH). Utilizing this technique, even the largest of glands can be effectively treated with minimal morbidity. The learning curve remains an obstacle, preventing more widespread adoption of this procedure.³

Material & Method

The study was conducted in the Department of Urology of tertiary care hospital.

Study Population

The study population constituted of patients with benign hypertrophy of prostate who attended outpatient department in Department of Urology, The study population comprised of two groups with a total 20 study participants. The study participants who fulfilled inclusion criteria were included in the study.

Inclusion Criteria

- Clinical suspicion of prostate hypertrophy on DRE (Digital rectal Examination)
- Prostate size <100gm.

Exclusion Criteria

- Bleeding diathesis
- Immunosuppressed patients.
- Patients with prostate >100gm.
- Urological cancers - Prostate Cancer, Cancer urinary bladder
- Bladder stone
- PVR>300ml
- Active UTI

- Neurogenic bladder

Groups

The participants who fulfil the study inclusion criteria were divided in to two groups – 20 each, with group 1 underwent traditional transurethral resection of prostate and group 2– who underwent 50 watts holmium laser enucleation.

Selection of Participants

The inclusion of participants to the groups was on the basis of lottery method to avoid selection bias.

Study Duration

The data collection period was total of 18 months for recruiting the patients.

Data Analysis

Data analysis was done with Statistical Package for Social Sciences (SPSS IBM) version 21.0. Required univariate and bivariate analysis was done.

Results & Observations

Table 1: Pre and post operative blood parameters of study participants. (n=40)

S.No.	Pre and post operative blood values	Group 1 Mean (±SD)	Group 2 Mean (±SD)
1.	Preoperative haemoglobin (gm/dl)	12.4(1.2)	11.6(0.7)
2.	Post operative haemoglobin (gm/dl)	11.2(0.9)	11.0(1.3)
3.	Preoperative sodium (mmol/L)	141(12)	139(9)
4.	Post operative sodium (mmol/L)	132(8)	141(11)

Urology parameters- post procedure

Mean (SD) of post operative peak urinary flow rate (ml) for group 1 was 18.2 (±1.0) and for group 2 was 21.8 (±1.3).

Table 2: Pre and post operative urinary parameters of study participants (n=40)

S.No.	Pre and post operative urinary parameters	Group 1 Mean (±SD)	Group 2 Mean (±SD)
1.	Preoperative maximum urinary flow rate (ml)	6.6(1.3)	7.1(0.9)
2.	Post operative maximum urinary flow rate (ml)	18.2(1.0)	21.8(1.3)
3.	Preoperative residual volume	78.2(17)	80.3(15)
4.	Post operative residual volume	23.3(2.0)	14(1.4)

Discussion

In the present study there was no statistical significant difference in hemoglobin and sodium levels between two groups pre and post operative

measurements. But in a previous study done by Sun N et al found that there was difference in hemoglobin levels ($p = 0.011$), and blood sodium levels ($p = 0.002$) after surgery.⁴ In a study done

by Khan F et al⁵ reported that observed reduction in Hb of 1.5 g/L ($p < 0.0001$) and a small clinically insignificant rise in Cr of 3.8 mmol/l were noted. Montorsi and colleagues found no TUR syndrome with HoLEP.

In the outcome of blood transfusion, HoLEP approach was obviously better than TURP and it might be associated with better laser coagulation technology; however, trial sequential analysis did not allow them to draw any solid conclusion on safety. (Shanz Li et al⁶)

Conclusion

The outcomes of the study were operative time, catheterization time, American urological association symptom score, post operative-maximum urinary flow rate, post void residual volume, well being- serum sodium, hemoglobin and post operative side effects between the two groups.

The 50 watts holmium laser enucleation was not associated with more post operative complications including requirement for blood transfusion when compared to traditional TURP procedure.

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