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To study efficacy parameters by using operative time, postoperative catheterization time, American Urological Association symptom score, peak flow rate by 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. The study participants who fulfilled inclusion criteria were included in the study.*
Conclusion: *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. There was improvement in American urology score post procedure when compared to pre procedure. This improvement was more in 50 watts laser treatment.*
Keywords: *Catherterization, Holmium Laser & Post Operative & Efficacy.*

Introduction

In Benign prostatic hyperplasia (BPH) there is an unregulated proliferation of connective tissue, smooth muscle and glandular epithelium within the prostatic transition zone.[1] Prostate tissue is comprised of two different tissues. First, a glandular element composed of secretory ducts and acini; and a stromal element composed primarily of collagen and smooth muscle. Increased prostate volume and increased stromal smooth muscles are the features of BPH. McNeal describes two phases of BPH progression. Initially in the first phase there is increase in BPH nodules in periurethral zone followed by increase in nodules of glandular zone.[2]

American Urological Association Symptom Index to assess severity of benign prostatic hyperplasia (BPH). A score of 7 or less indicates mild BPH; a score of 8 to 19 indicates moderate BPH; a score of 20 to 35 indicates severe BPH.

Material & Method

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

Study Design: Hospital based, prospective observational study.

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.

HoLEP Instruments

-Telescope (4mm.,30 degree)
-Working Element
-Inner & Outer Sheath
-Piranha Morcellator system
-Morcelloscope
-Suction system
- 50 Watt Holmium laser with 600 µ fibre (Auriga XL)

Fig 01: 50 Watt Holmium laser (Auriga XL)

Results & Observations

Post operative complications

Among the group 1 patients treated by TURP, 15% of them had urinary tract infections once during their 3 months post operative period. Among the group 2 only 5% had the urinary tract infections during post operative follow up period. Among the group 2, bladder injury occurred during intra operative period in 2 (10%) patients. There were urinary complications like retrograde ejaculation and retention etc., in both TURP and laser treatment group. Urinary retention was seen in 2(10%) patients of group1 who underwent TURP. Urinary retention was seen in 1 (5%) patient and Erectile dysfunction in 1(5%) patient of group 2. Retrograde ejaculation was seen in 15(75%) patients in group1 and 17(85%) patients in group2. None of the group patients developed any electrolyte abnormalities. However, one patient (5%) had an episode of bleeding during surgery which required redo cystoscopy and coagulation of bleeder during postoperative period.

Table 01: Distribution of study groups according to the development of post operative complications (N =40)

S. No.	Post operative Complications	Group 1 n =20 N(%)	Group 2 n= 20 N(%)
1.	Urinary tract symptoms	3(15%)	1(5%)
2.	Electrolyte abnormalities	0	0
3.	Bleeding	1(5%)	0

Blood transfusion was neither required during surgery nor during postoperative period for participants who underwent TURP and holmium laser treatment. Post operative complications are seen more in TURP group when compared to50 watts Holmium laser group. However this was not found to be significant.

Table 02: Post operative features of study participants. (n=40)

S. No.	Post operative parameters	Group 1 N (%)	Group 2 N (%)	P value
1.	Post operative complications	4(20)	1(5)	0.512
2.	Blood transfusion done	-	-	-

P value <0.05 is significant

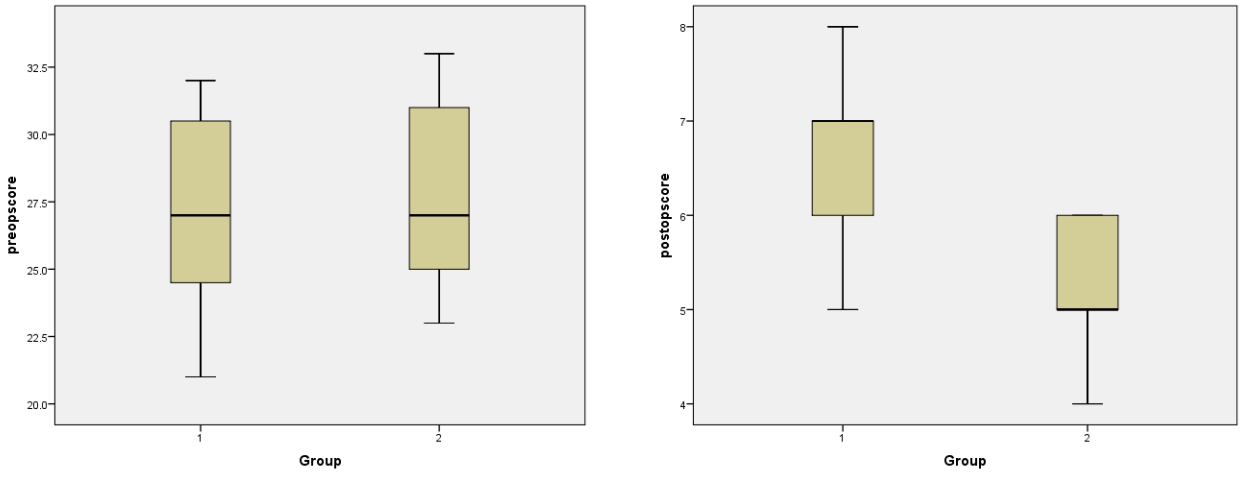
Surgery Details

The mean (SD) duration (in minutes) of TURP procedure was 44.6 (±6.2) and for holmium laser enucleation was 59.9(±6.9). Mean (SD) weight of the resected prostate (in gms) in TURP procedure was 30.75(±6.3) and in 50 watts holmium laser procedure was 36.4(±3.9).

Pre and post operative AUA score

Mean (SD) Preoperative American urology score was 26.4 (±3.2) and mean (SD) of post operative American urology score was 3.9 (±1.1) (Figure 4.6)

Figure 02: Box plot showing pre and post AUA score among the groups.



Preoperative score

Post operative score

Mean post operative haemoglobin and sodium values are higher among group 2 when compared to group 1.

Discussion

HoLEP was first introduced by Gilling[3] in 1996, since then multiple studies have shown the safety, efficacy and durability of this procedure. Most of the studies have been done with 100 watt laser. No study has compared the Standard Monopolar TURP with 50 watt HoLEP. Transurethral resection of the prostate (TURP) has remained the procedure of choice for the surgical treatment of bladder outflow obstruction secondary to benign prostatic enlargement (BPE) for almost five decades [Madersbacher and Marberger, 1999][4]. However, morbidity after TURP is significant, with reported rates of blood transfusion of approximately 8% [AUA Practice Guidelines Committee, 2003], hyponatraemia in up to 3% [Rassweiler et al. 2006][5], and a reoperation rate of 1% per year. Numerous operations have been developed to improve the outcomes and reduce the morbidity of transurethral prostatic surgery, but most have not stood the test of time, either due to patient dissatisfaction or lack of durability [Gilling et al. 1996][3].

The mean (SD) duration (in minutes) of TURP procedure was 44.6 (±6.2) and for holmium laser enucleation & morcellation was 69.9(±6.9). Mean (SD) weight of the resected prostate (in gms) in TURP procedure was 30.75(±6.3) with a resection rate of 0.68g/min and in 50 watts holmium laser procedure was 36.4(±3.9) with an enucleation rate of 0.52 g/min. In a previous study by Sun N et al which found that laser and TURP groups had comparable operation time (p = 0.105)[6] In a study done by Khan F et al[7] it was reported that mean enucleated weight (excluding bladder neck incision (BNI) cases) was 43.3g (95% CI 39.3,47.3) with mean operating room times (enucleation & morcellation) of 99.1 mins with an enucleation rate of 0.68 g/min (95% CI 0.61,0.75).

In perioperative indicators, HoLEP was associated with longer operation time. This may be due to the fact that morcellation in HoLEP requires a much longer time than traditional TURP. (Shanz Li et al [8)] Wang L et al [9] found operative time was longer with HoLEP than TURP, some conventional meta-analyses also found the same results (Zhao et al., 2013)[10]. HoLEP may remove more tissue than TURP. In general the 50 watt HoLEP takes more time but the amount of resected tissue is more because the plane of resection is between false capsule and true capsule similar to the plane of open prostatectomy. In our study, enucleation time is less than other study with 50 watt HoLEP in terms of rate of tissue(in grams) enucleated per minute .One more reason of more resection time is our initial learning curve.

Conclusion

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.

There was improvement in American urology score post procedure when compared to pre procedure. This improvement was more in 50 watts laser treatment.

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