Update on LUTS/BPH
(Clinical field – surgical)

Pusan National University Hospital
Lee Wan
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PHOTOSELECTIVE VAPORIZATION OF THE PROSTATE 5 YEAR FOLLOW-UP STUDY

- **Mahmood A Hai MD** *. Westland MI.
- To evaluate the 5 year clinical outcomes of photoselective vaporization of the prostate (PVP) in the treatment of BPH with obstruction.
- The first 321 patients who underwent PVP between November 2000 and June 2003.

**RESULTS:**
- AUA score: 24.0±0.3 and 4.9±0.2,
- QOL score: 4.2±0.1 and 0.8±0.1,
- Qmax: 8.6±0.2 and 21.1±0.4,
- PSA: 3.0±0.2 and 2.2±0.1,
- TRUS: 54.3±1.9 and 42.2±1.4,
- PVR: 168±15 and 28±4,

- Of the 242 patients followed for 5 years, 14 - repeat PVP and 3 with transurethral incision of the bladder neck (TUIBN), for an overall retreatment rate of 7.0%.

**CONCLUSIONS:** This study establishes the long term durability of PVP for the treatment of BPH with obstruction demonstrating sustained clinical effects similar to or better than those reported for other procedures.
COMPARATIVE EVALUATION OF HIGH POWER 532nm LASER SYSTEMS, 120 WATT (HPS) VS 80 WATT (KTP), FOR PHOTOSELECTIVE VAPORIZATION OF THE PROSTATE (PVP) OF LARGE GLANDS WITH VAPORIZATION INCISION TECHNIQUE (VIT)

Edward Zoltan MD *, Richard K Lee MD, MBA , Rajiv Saini MD , Celeste A Egan RN, CNP , Steven A Kaplan MD and Alexis E Te MD . New York NY

Evaluated the HPS in patients to compare its safety and efficacy in treating BPH to its KTP predecessor.

METHODS: 106 men, treated with either HPS or KTP, were evaluated.

RESULTS: Mean ages in the HPS and KTP groups were 69.9 and 70.8 years. Mean preoperative PV were 106 vs. 104 mL (p=0.57); mean lasing time 57.2 vs. 109 minutes (p<0.001); and mean preop Qmax 5.7 vs. 8.3 ml/sec (p=0.03).

Energy used was not significantly different: 269,663 vs 352,924 Joules (J) (p=0.05). Comparison to KTP at 12 mo showed equivalent IPSS (5.7 vs 5.9, p=0.85), Qmax (13.7 vs. 16.0, p=0.22), PVR (87.6 vs. 68.9, p=0.99), and PSA (2.9 vs. 2.5, p=0.70).
COMPARATIVE EVALUATION OF HIGH POWER 532nm LASER SYSTEMS, 120 WATT (HPS) VS 80 WATT (KTP), FOR PHOTOSELECTIVE VAPORIZATION OF THE PROSTATE (PVP) OF LARGE GLANDS WITH VAPORIZATION INCISION TECHNIQUE (VIT)

- **RESULTS:** No transfusions were required. All were discharged within 23 hours without complication. 3 patients were anti-coagulated at PVP: 1 with von Willebrand's Disease (vW), 1 on aspirin (ASA), and 1 on ASA and clopidogrel. One with vW was readmitted 13 days after PVP to resolve hematuria with clotting factor transfusion. Reoperation was not required.

- **CONCLUSIONS:**
  HPS represents a more efficient treatment of symptomatic BPH with shorter laser time while maintaining equivalent safety and efficacy to KTP.

<table>
<thead>
<tr>
<th>Results of HPS (120W)</th>
<th>IPSS</th>
<th>QOL</th>
<th>Qmax (cc/sec)</th>
<th>PVR (cc)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op</td>
<td>17.9</td>
<td>4.5</td>
<td>5.7</td>
<td>362.3</td>
<td></td>
</tr>
<tr>
<td>1 month</td>
<td>11.2</td>
<td>2.4</td>
<td>13.9</td>
<td>94.7</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>3 month</td>
<td>7.6</td>
<td>1.9</td>
<td>16.5</td>
<td>64.8</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>6 month</td>
<td>7.9</td>
<td>1.9</td>
<td>14.1</td>
<td>59.3</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>12 month</td>
<td>5.7</td>
<td>1.3</td>
<td>13.7</td>
<td>87.6</td>
<td>p&lt;0.001</td>
</tr>
</tbody>
</table>
A RANDOMIZED, PLACEBO–CONTROLLED, DOUBLE–BLIND STUDY OF THE USE OF DUTASTERIDE FOR IMPROVING OPERATIVE OUTCOMES OF PHOTOSELECTIVE VAPORIZATION OF THE PROSTATE (DOP TRIAL)

- Jennifer L Bepple *, Bethany Barone MS and Gregg Eure MD . Norfolk VA
- To obtain preliminary data on the effects of dutasteride on surgical outcomes for patients undergoing PVP.
- **METHODS**: placebo–controlled, randomized, double–blind study. Fifty–nine patients were randomized to two arms, dutasteride 0.5 mg(29) or placebo(27) for 3 months prior to PVP.
- **RESULTS**: There were no pre–operative statistically significant differences between the two randomized groups. Average surgical time, Joules used, and blood loss were 12%, 16%, and 23% less respectively for patients who had received dutasteride compared with placebo. However, these results were not statistically significant. Ease of the procedure, as rated by the surgeon, was comparable between the two groups.
- **CONCLUSIONS**: Patients randomized to dutasteride experienced decreased time, joules, and blood loss during surgery. While not statistically significant, our results suggest a benefit of treatment with dutasteride prior to surgery.
CATHETER FREE LITHIUM TRIBORIDE (LBO) LASER PHOTOSELECTIVE VAPORIZATION PROSTATECTOMY (PVP)

- Massimiliano Spaliviero, Motoo Araki and Carson Wong, Oklahoma City.
- Evaluate the safety and efficacy of catheter free LBO laser PVP (120 w LBO side-firing laser system).
- Voiding trials were performed two hours post surgery. If unable to void, a urethral catheter was replaced. Patients were divided into two groups, those who were discharged without (C−) or with (C+) urethral catheters. IPSS, maximum flow rate and PVR were measured preoperatively and at 1, 4, 12 and 24 weeks post surgery.
- RESULTS: 88 consecutive patients. 49 (56%): discharged without (C−) and 39 (44%) were discharged with (C+) a catheter. Of patients who were C+, 25/39 (64%) had their catheter removed the morning after surgery. There were no significant differences in preoperative parameters, including age (C−: 67 ± 10 vs. C+: 71 ± 9 years), American Society of Anesthesiologists risk score (C−: 2.1 ± 0.7 vs. C+: 2.3 ± 0.5), IPSS (C−: 27 ± 7 vs. C+: 26 ± 7), Qmax (C−: 10 ± 4 vs. C+: 10 ± 7 cc/sec), PVR (C−: 56 ± 96 vs. C+: 52 ± 75 cc) and prostate volume (C−: 71 ± 38 vs. C+: 84 ± 53 cm3).
CATHETER FREE LITHIUM TRIBORIDE (LBO) LASER PHOTOSELECTIVE VAPORIZATION PROSTATECTOMY (PVP)

• **RESULTS**: There were no significant differences in the parameters of laser utilization (C−: 11 ± 8 vs. C+: 13 ± 8 minutes) and energy usage (C−: 79 ± 57 vs. C+: 84 ± 52 kJ). IPSS and Qmax values showed significant improvement within each group (*p < 0.05), but there were no significant differences between the two groups. All were outpatient procedures. 1/49 (2%) patient required catheter reinsertion in C−. The overall incidence of adverse events (C− and C+) was low (3 urinary tract infections, 11 hematuria over a week, 6 retrograde ejaculation) and did not differ between the two groups.

• **CONCLUSIONS**: Our experience suggests that catheter free LBO laser PVP is safe and effective for the treatment of LUTS secondary to BPH
IMPACT OF HEMOGLOBIN LEVELS ON THE EFFICIENCY OF GREEN LIGHT LASER (KTP 80W) VAPORIZATION OF THE PROSTATE

Stephan Buse, Christian Gilfrich, Gencay Hatiboglu, Johannes Huber, Jesco Pfitzenmaier, Axel Haferkamp and Markus Hohenfellner. Heidelberg Germany

The Green Light Laser (KTP 80W) has an absorption maximum at 532 nm, which is exactly the same as for hemoglobin. Thus in presence of hemoglobin, its application causes vaporization of the tissue. This effect depends on the concentration of Hb.

To test the hypothesis that Hb levels affect the efficiency of the KTP laser application.

METHODS: 164 consecutive patients undergoing KTP laser vaporization for benign prostate hyperplasia from Jan 2005 to Jul 2006

RESULTS: The mean age was 68.8 yrs, the mean prostate volume 58.3 mL, the mean flow 8.32 mL/s, the mean surgery duration 74.8 minutes the median preoperative hemoglobin level 144.5 g/L (interquartile range 132−151). The unadjusted correlation between preoperative hemoglobin level and surgery duration was −0.189 (p < 0.05), however after adjustment for prostate volume this correlation was no longer significant (Pearson r = −0.140, p>0.05).

CONCLUSIONS: Hemoglobin levels, in the range of clinically encountered values, do not affect the efficiency of KTP laser vaporization of the prostate.
A RANDOMISED TRIAL OF PHOToselective vaporization of the Prostate (PVP) USING THE GreenLight Laser Versus TransUrethral Prostatectomy (TURP) WITH ONE YEAR FOLLOW—UP

- David M Bouchier-Hayes, Scott Van Appledorn, Patrick J O'Malley, Pat Bugeja and Anthony J Costello. Galway Ireland; Fort Pierce FL; Galway Ireland; Melbourne Australia and Melbourne Australia.

METHODS: 120 patients were randomised to undergo TURP or PVP after evaluation which is repeated at 6 weeks, 3, 6 and 12 months.

RESULTS: All 120 patients were similar at baseline. Both techniques produced equivalent significant improvement in flow rates, IPSS, decrease in prostate volume and significantly shorter LOC and LOS in the PVP group.

<table>
<thead>
<tr>
<th></th>
<th>TURP (n=58)</th>
<th>PVP (n=62)</th>
<th>Change within group from baseline</th>
<th>Comparison between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in flow mls/sec vs baseline</td>
<td>9.35±9.27 (−5.2 to 33.3)</td>
<td>11.16±8.8 (−10.1 to 33.2)</td>
<td>*=p&lt;0.00005</td>
<td>Not significant (n.s.)</td>
</tr>
<tr>
<td>% increase flow</td>
<td>146.6±205.5 (−58 to 1041)</td>
<td>148.7±133.6 (−85 to 725)</td>
<td>*=p&lt;0.00005</td>
<td>n.s.</td>
</tr>
<tr>
<td>Decrease in IPSS vs baseline</td>
<td>13.4±9.5 (−4 to 32)</td>
<td>14.7±8.4 (−7 to 31)</td>
<td>*=p&lt;0.00005</td>
<td>n.s.</td>
</tr>
<tr>
<td>% decrease in IPSS</td>
<td>52.3±36.7 (−25 to 100)</td>
<td>59.7±28.8 (−18 to 96.5)</td>
<td>*=p&lt;0.00005</td>
<td>n.s.</td>
</tr>
<tr>
<td>LOC (hrs)</td>
<td>44.18±33.6 (16–192)</td>
<td>13.7±9.7 (0–56)</td>
<td>n.s.</td>
<td>*=p&lt;0.00005</td>
</tr>
<tr>
<td>LOS (days)</td>
<td>3.28±1.0 (2–9)</td>
<td>1.1±0.4 (1–4)</td>
<td>n.s.</td>
<td>*=p&lt;0.00005</td>
</tr>
<tr>
<td>% Change in Prostate Vol.</td>
<td>24.21±22.27</td>
<td>18.32±25.65</td>
<td>p&lt;0.05</td>
<td>n.s.</td>
</tr>
</tbody>
</table>
OCTOGENARIANS WITH SYMPTOMATIC BPH HAVE SIMILAR OUTCOMES AFTER PHOTOSELECTIVE LASER VAPORIZATION OF THE PROSTATE (PVP) COMPARED TO A YOUNGER COHORT DESPITE INCREASED COMORBIDITIES

• Ricardo R Gonzalez, Samit D Soni, Balaji Reddy, Mazumdar Madhu, Steven A Kaplan and Alexis ETete. Houston TX; New York NY

• METHODS: A total of 301 patients, 37 age < 80 and 263 age ≥ 80, with symptomatic BPH had PVP with an 80 W KTP side-firing laser system.

• RESULTS: Older (≥80 years) men had more comorbidities than the younger cohort (CI 1.27 vs. 0.70, p<0.01), but no intergroup preoperative differences were noted in PSA, prostate volume, or bladder capacity. There was no significant difference in postop. events between both cohorts, such as AUR or reoperation, when controlled for IDC.

• CONCLUSIONS: PVP is a safe and effective treatment for urinary symptoms, retention, and reducing BPH medication use in octogenarians despite the presence increased comorbidities.
TRANSURETHRAL ENUCLEATIVE RESECTION OF PROSTATE WITHOUT LASER

- Liu Chunxiao, Xu Abai, Zheng Shaobo, Li Hulin, Xu Yawen, Chen Binshen, Fang Ping and Bian Jun. Guangzhou China

To assess safety, efficacy and long term reliability and durability of Transurethral Enucleative Resection of Prostate (TUERP) with Gyrus system without laser.

METHODS: Between Jan 2002 and Sep 2007, 1600 consecutive patients

RESULTS: mean age: 63.2±5.8 yrs, preop. mean prostate volume: 64.3g (35–250g), Qmax: 12.0±3.5ml/s, IPSS: 24.7±6.5 QoL: 4.2 ± 0.7.

The reflex of obturator nerve and perforation of bladder and severe complications such as urinary incontinence and TUR syndrome were not found during operation. Blood transfusion- only in 2 patients with large adenoma (volume>200g).

Catheter time: 1.5±0.7 days. Mean serum Hb and electrolyte did not drop significantly from baseline after the procedure. Temporary stress incontinence was reported in 42 cases (2.63%) At the 3 months follow-up, Qmax was 22.0±5.0ml/s, IPSS was 8.6±2.3 and QoL was 1.8 ± 0.3 (all parameters, p<0.01). No patients requires re-op. for residual tissue during 36 months follow-up.

CONCLUSIONS: TUERP can be done without laser, and it gained a good clinical outcome. The relief of bladder outlet obstruction also proved to be durable and reliable after 3 year follow up.
Noriaki Ono, Yoshitsugu Nasu and Takushi Kurashige. Kochi Japan.

This study demonstrates the feasibility of HoLAP in men with symptomatic BPH who are receiving anticoagulants.

**METHODS:** Between Jun 2006 and Oct. 2007, 13 men were treated with HoLAP who were receiving anticoagulants. Mean age was 77.4 years. Mean prostate vol. was 35.4cc (range 15 to 75 cc). All of them had severe urinary difficulty and 6 men were necessitating a transurethral catheter. 5 men had a heart disease, 2 men had a cerebrovascular accident and 3 men had peripheral vascular disease. Of these men, 8 were on aspirin, 3 on warfarin potassium, 2 on cilostazol, 1 on clopidogrel sulfate, 1 on ifenprodil tartrate and 1 on ticlopidine hydrochloride.

**RESULTS:** In 13 all patients HoLAP was performed successfully. No major complication occurred and no blood transfusion was required. Average cath. time was 2.4 days and no men required irrigation. Although 1 patient required intermittent catheterization due to persistent obstructive voiding.

**CONCLUSIONS:** Our initial experience indicates that HoLAP is a safe and effective treatment option in high risk patients receiving anticoagulants having severe lower urinary tract symptoms due to BPH.
TRANSURETHRAL RESECTION OF THE PROSTATE FOR THE TREATMENT OF LOWER URINARY TRACT SYMPTOMS RELATED TO BENIGN PROSTATIC HYPERPLASIA: HOW MUCH SHOULD WE RESECT?

- Alberto A Antunes, Rafael F Coelho, Daher C Chade, Evandilson G C de Barros, Katia R Leite, Geraldo Freire and Miguel Srougi. Sao Paulo Brazil
- We analyzed the impact of the percent of resected tissue (PRT) during TURP on the improvement of LUTS.
- A prospective analysis of 144 consecutive men who underwent TURP for treatment of LUTS between February 2006 and June 2007. Final sample was comprised of 88 patients. Patients were divided in three groups according to the PRT: Group 1 < 30%; group 2 30% to 50%; and group 3 > 50%. Every patient was re-evaluated 3 months after surgery. We used the IPSS including the question related to QoL, nocturia and PSA levels.
- **CONCLUSIONS**: Resection of 30% of prostatic tissue seems to be sufficient to alleviate LUTS related to BPH. However these patients may not show a significant decrease on serum PSA levels.
LAPAROSCOPIC TRANSCAPSULAR SIMPLE PROSTATECTOMY MILLIN: OUR EXPERIENCE AFTER 50 CASES

- Francesco Porpiglia, Alessandro Volpe, Michele Billia, Susanna Grande, Julien Renard, Massimiliano Poggio and Roberto M Scarpa. Torino Italy

- From Jan. 2003 to Sep. 2007, 50 patients with BPH (prostate volume > 80 ml) underwent laparoscopic simple prostatectomy Millin (LSPM). the patients were divided into 4 chronological groups

- RESULTS: Mean age was 70.8 yrs. Mean prostate and adenoma volume were 83.6 (50–154) ml and 70.3 ml. Mean PSA was 7.83 ng/dl. Mean Qmax. was 9.1 ml/s and mean IPSS was 24.3. Mean preoperative Hb was 13.8 mg/dl.

- Mean op time of 100.4 (60–180) minutes, mean blood loss of 317.5 (50–2000) ml. Hb level on POD 1 was 11.3 (6.9–14.4) mg/dl.

- Mean cath. time was 4.3 (5–20) D and the mean hospital stay was 5.1 (3–21) days. 2 patients had significant intraop. bleeding in the first part of the learning curve and 1 patient developed a urethral stricture.
LAPAROSCOPIC TRANSCAPSULAR SIMPLE PROSTATECTOMY MILLIN: OUR EXPERIENCE AFTER 50 CASES

- The statistical analysis showed a significant difference between Group 1 (first 12 patients) and Group 4 (last 13 patients) in terms of op. time (p=0.01), blood loss (p=0.01), hospital stay (p=0.003) and cath.time (p=0.001).

- **CONCLUSIONS:** LSPM is a safe and effective technique for the treatment of large prostatic adenomas. A significantly lower catheterization time and hospital stay can be achieved with increasing experience. The outcomes equal those of open surgery and holmium laser enucleation.
VALIDATION OF SUBJECTIVE BENEFIT AFTER INTRAPROSTATIC BOTULINUS TOXIN A INJECTION IN PATIENTS WITH PROSTATIC HYPERPROLIFERATION—AN EVIDENCE BY REAL–TIME TISSUE ELASTOGRAPHY

Takeo Hiraoka, Koji Wake and Mikio Igawa. Izumo Japan.

To validate the clinical usefulness of BTX–A injection into the prostate as a minimal invasive treatment for BPH.

22 patients (mean age 74 yrs)- Saline solution of 1.5ml containing BTX–A 100 units was injected into each lobe of prostate through perineal approach.

Real–time tissue elastography (RTE) can allow mapping tissue elasticity.

RESULTS: Elasticity of the prostate was significantly reduced after BTX–A injection (2 wks; 0.68, 1 month; 0.56, 3 months; 0.54, 6 months; 0.57), compared to the pre–treatment level of 0.77 (p<0.05, each).

Total IPSS was significantly improved (2 wks; 17.2, 1 mon; 15.7, 3 mons; 13.9, 6 mons; 11.6) compared with pre–treatment score of 20.7 (p<0.05, each).

QOL score was significantly improved (2 wks; 4.5, 1 month; 4.8, 3 months; 3.3, 6 months; 2.8) compared with the basal score of 4.9 (p<0.05, each).

But, UFM results of voided volume, residual urine volume rate, or Qmax did not show any significant improvement. Unexpectedly, prostatic volume was significantly increased 2 wks after BTX–A injection (64.2 ml)

CONCLUSIONS: Intraprostatic injection of BTX–A therapy affords excellent improvement in subjective symptoms and can be a superior alternative to TUR–P, especially in elder patients with comorbidities.
TRANSURETHRAL RESECTION OF THE PROSTATE COMBINED WITH HOLMIUM LASER ENUCLEATION (\(\omega TURP\))

- Noriaki Tokuda, Takashi Dejima and Takehiro Kanou. Saga Japan.

- We present a combined procedure of HoLEP and TURP (\(\omega TURP\)).

- Between Jan 2007 and Nov 2007, 20 patients with lower urinary tract symptoms associated with relatively large BPH underwent \(\omega TURP\). The operation process include: Step 1—Make the inverted “U” incision just proximal to the verumontanum by Holmium laser and find the surgical capsule plane.
Step 2—Dissect the lower part of the whole gland between 2— and 10—o'clock positions like “\(\omega\)”.
Step 3—Resect the whole gland like usual TURP.

- **Result:** Mean prostate volume was 57 gm. The mean operation time was 169 minutes. The mean Qmax increased from 3.2 to 18.2ml/sec (\(p<0.01\)) while mean IPSS declined from 26.2 to 8.4 (\(p<0.01\)) and QOL from 5.6 to 1.8 (\(p<0.01\)). Blood transfusion was not needed. Severe complication such as urinary incontinence and TUR syndrome were not found.

- **CONCLUSIONS:** This \(\omega\)-TURP does not need an expensive morcellator and intravesical morcellation, complements the difficulty with HoLEP.
HOLMIUM LASER ENUCLEATION OF THE PROSTATE FOR VERY LARGE PROSTATES

- *Mahesh C Goel, Shelly E Handa and James E Lingeman. Indianapolis IN*
- We present our experience and outcomes in a large series of HoLEP procedures for very large glands.
- **METHODS:** HoLEP for BPH with TRUS volume of >175cc. Follow up was via clinical records, questionnaire, and telephone interview.
- **RESULTS:** 50 patients, with a mean age of 72.3 years; mean pre-treatment TRUS volume was 210.4cc (175–309). Mean PSA was 13.4ng/ml, mean AUA symptom index was 18.5, and mean Qmax was 8.6cc/s. Mean operative time was 132 min (96min [39–263] for enucleation and 36 min [11–120] for morcellation. Mean post-operative catheter time was 16.9 hours and mean hospital stay was 25.4 hours. Mean weight of enucleated tissue was 165.2gm. At 6 month follow-up, AUA symptom index was 8.6 and mean PSA was 0.82ng/ml. During six months of follow up, no patient required catheterization, treatment for bladder neck contracture, or persistent incontinence.
- **CONCLUSIONS:** This data documents the low morbidity and satisfactory outcomes for HoLEP even when applied to very large prostates. HoLEP is the only endoscopic technique that allows comparable tissue removal to open prostatectomy for such patients.
Mattioli, S., Institute Clinic S.Ambrogi, Dept. of Urology, Milan, Italy

To study the safety and efficacy of a tullium laser (2.013nm) for transurethral vaporization of benign obstructive prostate tissue (BPH).

**Methods:** Vaporization of the prostate was performed on small to medium prostates (<35g), while VapoResection was found to be much faster on large glands. The size of the prostate ranged from 20 to 85 grams in the group. A three way catheter is placed and removed 5-6 hours later.

**Results:**

A group of 210 consecutive patients ranged in age from 43 to 89.

Our final results (mean AUA-SS from pre-op 20.8 to post-op 7.9; mean Q-max from 0-7.6 to 22.8 ml/sec; PVR from 110.2 to 15.5 ml) are comparable to TURP and PVP results. No patients required additional treatment such as bladder neck incisions, strictures etc. 10 patients required retreatment with this technique due to insufficient vaporization of prostatic tissue (lateral lobe) in the first treatment.
THULIUM:YAG VAPORESECTION OF THE PROSTATE. EXPERT VS. NOVICE– FUNCTIONAL OUTCOME


**Introduction**: Thulium:YAG-(RevoLix) vapouresection has been introduced for the treatment of benign prostatic enlargement (BPH). To compare functional outcome, complications and intraoperative parameter between an expert surgeon (group 1) and a novice (group 2) in laser surgery (with experience in transurethral resection).

**Material & Methods**: A total of 69 patients were included in this observation and randomly assigned between both surgeons. After performing 5 patients under guidance and supervision of the expert surgeon, the novice surgeon performed vapouresection on his own. Assessed parameter were resection time, complications and functional outcome.

**Results**: 40 patients in group 1 and 29 patients group 2.

<table>
<thead>
<tr>
<th>Volume (ccm)</th>
<th>Operation time (min)</th>
<th>Decrease in haemoglobin (g/dl)</th>
<th>Catheter time (d)</th>
<th>Qmax (rise%)</th>
<th>Residual urine (decrease%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>37.88</td>
<td>55.4</td>
<td>.85</td>
<td>2</td>
<td>119.25 84.36</td>
</tr>
<tr>
<td>Group 2</td>
<td>37.11</td>
<td>59.44</td>
<td>1.15</td>
<td>2</td>
<td>125.24 80.14</td>
</tr>
</tbody>
</table>
Summary

- 80 Watt KTP and 120 Watt HPS, LBO laser, Thulium laser, all of these are safe and effective for the treatment of LUTS secondary to BPH.
- TUERP, ω-TURP with HoLEP do not need an expensive morcellator and intravesical morcellation.
- Resection of 30% of prostatic tissue seems to be sufficient to alleviate LUTS related to BPH.
- LSPM is a safe and effective technique for the treatment of large prostatic adenomas and can be another option for BPH treatment.
- PVP is a safe and effective treatment for LUTS, and reducing BPH medication use in octogenarians despite the increased comorbidities.
- Intraprostatic injection of BTX–A therapy affords excellent improvement in subjective symptoms, alternative to TUR–P, especially in elder patients with comorbidities.
경청해 주셔서 감사합니다!