

Table 2: Postoperative and early functional outcomes of patients treated with HoLEP

Variables	Learning curve eras			p-value
	< 25 cases	25-50 cases	> 50 cases	
<b>Postoperative and functional features</b>				
Catheter time (days) (median, IQR)	3 (3–5)	3 (3–3)	3 (3–3)	0.013
Hospital stay (days) (median, IQR)	5 (4–6)	4 (4–4)	4 (4–4)	0.001
Postop Q max (mL/s) (median, IQR)	21.4 (18.0–24.5)	23.0 (18.0–28.0)	21.8 (18.0–26.5)	0.206
Postop Post voiding residual (mL) (median, IQR)	30 (0–50)	30 (0–50)	30 (0–50)	0.977
Postop PSA (ng/mL) (median, IQR)	0.90 (0.60–0.90)	1.00 (0.71–1.50)	0.94 (0.55–1.50)	0.06
Postop IPSS (median, IQR)	5 (1–9)	5 (0–7)	2 (0–7)	0.937
Postop IIEF-5 (median, IQR)	18 (14–21)	17 (13–20)	15 (10–20)	0.539
Postop OAB-q (median, IQR)	13 (13–20)	13 (13–16)	13 (13–15)	0.381
Postop ICIQ-sf (median, IQR)	0 (0–0)	0 (0–0)	0 (0–0)	0.529
Postop QoL (median, IQR)	1 (0–2)	1 (0–2)	1 (0–2)	0.700
$\Delta$ (postop-preop) Qmax (median, IQR)	21.9 (24.5-18.5)	22 (27.1-18.5)	21.8 (27-18)	0.93
$\Delta$ (postop-preop) IPSS (median, IQR)	-20 (-14 ; -24)	-20 (-18 ; -26)	-18 (-13 ; 23)	0.33
$\Delta$ (postop-preop) ICIQ-sf (median, IQR)	-7 (-8 ; 5)	-3.5 (-1.5 ; -7)	-10 (-4 ; -7.5)	0.27
$\Delta$ (postop-preop) OAB (median, IQR)	0 (0 ; 0)	-2 (-1 ; -4)	-4 (-2 ; -5)	0.09
Early (within 1 month) surgical complications according to Clavien Dindo(n, %)	8 (32%)	5 (20%)	8 (9.2%)	0.02
CL complications <2 n (%)	3 (12%)	1 (4%)	2 (2.2%)	/
CL complications $\geq$ 2 n (%)	5 (20 %)	4 (16%)	6 (7.0%)	/
Delayed (> 1 month) surgical complications according to Clavien Dindo (n, %)	2 (8%)	1 (4%)	5 (5.7%)	0.83
CL complications <2 n (%)	0 (0%)	0 (0%)	2 (2.2%)	/
CL complications $\geq$ 2 n (%)	2 (8%)	1 (4%)	3 (3.5%)	/

## SC16

### HoLEP reveals higher rates of incidental prostate cancer compared to traditional endoscopic surgery for benign prostatic obstruction: A retrospective cohort study

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**Aim of the study:** The vast majority of prostatic cancer is currently detected by needle biopsy, nevertheless, the rate of incidental prostate cancer (IPC) after surgery for benign prostatic obstruction (BPO) remains 4–16%. Even if transurethral resection of the prostate (TURP) is still considered the gold standard technique, several laser minimally-invasive techniques for prostate tissue ablation are currently available. These technologies differ from TURP in interaction with prostatic tissue, so that differences exist in the features of prostate specimens as well as in the amount of tissue for pathologic evaluation since an enucleation technique allow the ablation of a greater percentage of tissue. The primary aim of this study is to compare IPC incidence in TURP and holmium laser enucleation of the prostate (HoLEP).

**Materials and methods:** We retrospectively evaluated men undergoing HoLEP and bipolar TURP, having no clinical suspicion of prostate cancer or a recent negative prostate biopsy. Preoperative recordings include pharmacological therapy, TRUS prostate volume, PSA, PSA density (PSAD). We calculated the percentage of ablated tissue by means of postoperative TRUS evaluation of prostate volume. Diagnosis of IPC and its pathological stage and grade. The t-student test was used to compare normal variables, Wilcoxon test to compare non-normal variables, univariate and multivariate non-parametric regression to evaluate the association between IPC and preoperative features.

**Results:** 418 consecutive men underwent HoLEP (n = 140, 33.5%) or TURP (n = 278, 66.5%). HoLEP group had higher PSA ( $5.2 \pm 5.7$  vs  $3.7 \pm 4.1$  ng/mL,  $p = 0.001$ ) and prostate volume ( $96.5 \pm 43.1$  vs  $62.5 \pm 33.7$  mL,  $p < 0.001$ ), while no difference was found in PSAD ( $0.05 \pm 0.06$  vs  $0.07 \pm 0.1$ ,  $p = 0.622$ ). A higher percentage of tissue was ablated by HoLEP ( $51.8 \pm 16.0$  vs  $40.6 \pm 15.3\%$ ,  $p < 0.001$ ). Overall, IPC was found in 27 men (6.5%), with a significant difference between the groups: 14/140 (10%) in HoLEP group and 13/278 (4.7%) in TURP group ( $X^2 = 4.4$ ;  $p = 0.037$ ); there was no difference in distribution Gleason score and T-stage between the groups ( $X^2 = 2.3$ ;  $p = 0.526$ ;  $X^2 = 0.3$ ;  $p = 0.704$ ).

Multivariate analysis showed that IPC is significantly associated with surgical technique ( $p = 0.047$ ). Radiation therapy was given in 7 men of HoLEP group and 4 of TURP one while 5 patients of both the groups underwent radical prostatectomy. With a mean follow-up of 47.3 months, we recorded progression to metastatic stage only once, while 2 men died for non-cancer related causes.

**Discussion:** In our series, HoLEP was associated with a higher incidence of IPC. This different detection rate could be explained by the greater ablative power offered by an enucleation technique but we need further studies to evaluate whether the histological features of samples could facilitate the detection of IPC and, above all, to understand the clinical and oncological relevance of this increased detection rate.

## SC17

### MoLEP vs HoLEP: Preliminary data on prospective randomized trial on the comparison standard HoLEP and MoLEP (HoLEP with Moses technology)

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**Aim of the study:** Benign prostatic hyperplasia (BPH) is a common condition in older men. The treatment consists in ablation of prostatic tissue using a variety of techniques such as electrocautery, lasers, radiofrequency devices, microwave devices. Several techniques use laser energy to resect, enucleate or ablate hyperplastic prostate tissue. Holmium:Yttrium-Aluminium-Garnet (YAG; 2140-nm wavelength) laser is used for holmium laser enucleation of the prostate (HoLEP: H) technique. MoLEP (M) is a usage of HoLEP technique that endorse a modified laser pulse with Moses technology (Lumenis® MOSES Pulse120H). We are conducting this phase 3b study of HoLEP vs. MoLEP to expand the post-marketing data on safety and efficacy of MoLEP enucleation in BPH treatment.

**Materials and methods:** We are conducting an ongoing single center phase 3b study in men with moderate to severe BPH-associated symptoms refractory or intolerant to medical therapy or with acute or chronic urinary retention and prostate volume of  $>80$  mL. Patients were excluded if they received previous surgery, there is a suspect of prostate cancer, there is an untreated urinary infection, there

are cardiovascular comorbidities or patients suffered of neurological bladder. 55 (28/27 H/Mgroups) patients were randomized preoperatively in a 1:1 fashion (2 Joule pulses at 50 Hz frequency) to HOLEP treatment (group A) or MOLEP treatment (group B) of prostate tissue. All the procedures were performed by a single experienced operator using the traditional 3 lobes technique. The primary endpoint is the evaluation of the difference in average treatment duration between the two procedures. Comparisons of means in the paired sample was performed with a two-tail T-test ( $\hat{I} \pm$  power of 0.05 to observe a 10% difference in time of enucleation).

**Results:** Mean age was 70 in both groups. Average baseline volume of prostates were 92 and 95 ml in group A and B respectively. Comparison of the 2 modalities lead to a reduced time of enucleation for M (H/M:30.5/23 minutes;  $p=0.03$ ), time of treatment (H/M:52/46;  $p=0.7$ ) and time to hemostasis (H/M:5.5/4.6minutes;  $p=0.28$ ). Total energy for Haemostasis or enucleation was similar in both arms ( $p=0.85$  and  $0.33$  for the 2 comparisons). No bleeding was observed in both groups ( $p=0.34$ ). Decrease in Hb levels postoperatively was 0.99 and 1.08 in H and M arms ( $p=0.69$ ). Fiber consumption length was 2.97 mm and 1.87 mm in groups A and B ( $p=0.05$ ). Weight/energy ratio was similar in 2 arms ( $p=0.78$ ). Interestingly, weight/time ratio (grams of morcellated prostatic tissue/minute of enucleation) was favor in M group: 2.14 vs. 2.82,  $p=0.32$

**Discussion:** This ongoing phase 3b study of HOLEP vs. MOLEP in men with BPH is showing significant reduction in enucleation time, however demonstrating similar short-term outcomes in terms of total timing of treatment and hemostasis, energy used, bleeding (hematuria and postoperative Hb levels). There is, however, lower fiber consumption with MOLEP and a more efficient weight of enucleated tissue/time unit in the MOLEP group.

## SC18

### Comparison of perioperative and mid-term outcomes between thulium laser vaporization and vapoenucleation: A propensity score analysis

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**Aim of the study:** Thulium laser vapoenucleation (ThuVep) is considered equivalent to transurethral resection of prostate for treatment of benign prostatic obstruction. Conversely, thulium laser vaporization (ThuVap) is not yet considered comparable to the gold standard according to European Association of Urology Guidelines. We compared early and late outcomes between ThuVep and ThuVap.

**Materials and methods:** Within our institutional database with prospective collected data we identified patients treated with ThuVep or ThuVap. We relied on inverse probability of treatment weighting (IPTW) to reduce the effect of inherent differences between ThuVep and ThuVap. Univariable and multivariable linear and logistic regression models (MLRM) were used.

**Results:** Between 2012 and 2018, we identified 692 patients treated with either ThuVep [442 (63.9%)] or ThuVap [250 (36.1%)]. Median follow-up was 44 months. Median International Prostatic Symptoms Score drop was 16. ThuVap patients had median higher preoperative maximum flow (8 vs 8.6 ml/sec;  $p=0.04$ ) and were more frequently in anticoagulant or antiplatelet therapy (29.5 vs 20.3;  $p=0.002$ ). In MLRMs testing for surgical technique predictors anticoagulant or antiplatelet therapy achieved independent predictor status for higher ThuVap rates (OR: 1.49;  $p=0.001$ ). However, no difference was found

in early (OR: 0.90;  $p=0.08$ ) and late (OR: 0.85;  $p=0.2$ ) complication rates between ThuVap and ThuVep. Finally, ThuVap did not achieved independent predictor status for lower IPSS drop. Results were confirmed after IPTW adjustment.

**Discussion:** Based on our results no statistically significant difference exist between ThuVap and ThuVep in early and late complication rates. Moreover, IPSS drop was similar in the two groups.

## SC19

### Operative profile, safety and functional outcomes after Greenlight laser prostate surgery: Results from multicenter italian cohort analysis

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**Aim of the study:** In the two past decades, Greenlight laser therapy has been considered a valid alternative for the treatment of lower urinary tract symptoms (LUTS) associated to benign prostatic hyperplasia/benign prostatic obstruction (BPH/BPO). However, the debate on the effectiveness of laser therapy compared to conventional techniques is still open. Aim of our study is to analyze and describe the use of GreenLight laser prostate surgery in Italy, with particular regard to the surgical techniques performed and the surgical and functional outcomes at mid term follow-up.

**Materials and methods:** From March 2012 to July 2018, patients who underwent GreenLight laser prostate surgery for LUTS due to BPH/BPO from 19 Italian centers were included. The following parameters were evaluated in the population: age, prostate volume, prostate adenoma volume, PSA tot, Qmax at uroflowmetry (UFM), International Prostatic Symptoms Score (IPSS), previous therapy for LUTS, use of anticoagulant/anti-aggregant. We recorded also kind of anesthesia, mean laser time (min), mean irradiation time (min), TURP conversion/completion rate, post-operative day of catheter removal, postoperative acute urinary retention (AUR), hospital stay, variation of haematocrit (Ht) and haemoglobin levels (Hb). Early complications has been classified according to the Clavien-Dindo classification, the re-operation rate within 30 days and after 30 days, the late complications and the Patient Global Impression of Improvement were also collected. Changes over time in terms of blood loss and functional outcomes (IPSS and Qmax at the UFM at 6 and 12 months) were tested with Student's test for paired samples. We assumed  $p \leq 0.05$  as level of statistical significance.

**Results:** Overall, 1077 were enrolled in the study were, 554 (56.4%) treated with standard vaporization and 523 (48.6%) with anatomical vaporization. Complete population characteristics and surgical details are described in Table 1. The Student's T Test for paired samples showed no statistically significant differences in terms of reduction of Ht preoperative vs Ht postoperative ( $42.80 \pm 3.911$  vs  $39.93 \pm 5.359$  CI 95%  $p=0.3$ ) and pre-intervention and post-intervention Hb levels ( $14.28 \pm 1.464$  vs  $13.72$   $p=0.35$ ). Compared with the pre-operative Qmax ( $8.60 \pm 2.640$ ), the 6 and 12 month UFM showed a significant improvement [ $19.56 \pm 6.291$ ,  $p < 0.05$  and  $19.99 \pm 5.923$   $p < 0.05$ ]. In terms of IPSS variation, compared to the baseline level ( $22 \pm 5.516$ ) the 6 and 12 month follow up confirmed a significant reduction ( $8.01 \pm 4.414$   $p < 0.05$  and  $5.81 \pm 4.129$   $p < 0.05$ ). Postoperative complications have been CD0, CD1, CD2, CD3, CD4 in 33.0%, 35.3%, 2.9%, 0.3%, and 0.6%.