

## **URINARY INCONTINENCE AFTER HOLMIUM LASER ENUCLEATION OF THE PROSTATE; ASSESSMENT OF THE PREDICTORS AND TIME TO CONTINENCE RECOVERY.**

### **Hypothesis / aims of study**

Holmium laser enucleation of the prostate (HoLEP) was introduced as a minimally invasive treatment for bladder outlet obstruction secondary to benign prostate hyperplasia (BPH). Early postoperative transient urinary incontinence (UI) has been frequently reported.

In this study we prospectively assess the predictors of postoperative incontinence and time to continence recovery.

### **Study design, materials and methods**

Since adoption of HoLEP as a new treatment for BPH in our institute, a prospectively maintained database was created.

After signing an informed consent form, HoLEP was performed in a standardized approach [1]. Three surgeons performed 453 HoLEP procedures from August 2012 to July 2015.

Postoperatively, patients were invited for follow-up at 1, 4 and 12 months, and then annually. IPSS (international prostate symptom score), uroflowmetry, and residual urine estimation were performed each visit. PSA (prostate specific antigen) level was tested at 4 months and then annually unless otherwise indicated.

Urinary continence was assessed both subjectively (conditions associated with incontinence) and using one-hour pad test for any complaint of UI and graded accordingly [2].

After obtaining institutional review board approval, database was reviewed for patients completed one year follow up. Patients with history of neurologic disorder or previous prostate surgery were excluded. Analysis was performed to identify the independent predictors for prolonged postoperative UI to 4 months and persistent UI at 12 months.

### **Results**

Urinary continence status was summarized in **figure 1** as depicted in each follow up visit. Out of 313 patients included in the analysis, 89 (28.5%) patients complain of UI at one month. UI persists in 26 (8.3%) at 4 months; 8 urge UI, 16 stress UI and 2 mixed UI. Out of those 28 patients, one-hour pad test was negative in 7, grade 1 (less than 10gms) in 11 and grade 2 (11-50gms) in 8.

On univariate analysis; surgeon (C), indication of intervention (hematuria of prostatic origin), number of previously performed HoLEP procedures by the surgeon, cases done among the first 20-50 cases in the learning curve and prolonged operating time were significantly associated with UI of any type or grade at 4 months **table 1**. On multivariate analysis, only cases done among the first 20 procedures of the learning curve (OR; 1.4, 95%CI 1.1: 1.9, P=0.04) and case density during learning curve (OR; 1.6, 95%CI 1.3: 3.4, P=0.01) are the independent predictors for prolonged UI at 4 months postoperative.

At 12 months, 7 patients reported persistent UI; 2 UUI, 4 SUI and one mixed UI. One-hour pad test revealed grade 1 UI IN 5 and grade 2 UI in 2 patients. Older patients are more prone to have persistent UI at one year ( $76 \pm 8$ ) vs. ( $67 \pm 11$ ) years (OR; 1, 95%CI 1.1: 1.4, P=0.02).

At last follow up, only 5 (1.5%) cases required anti-incontinence surgery.

### **Interpretation of results**

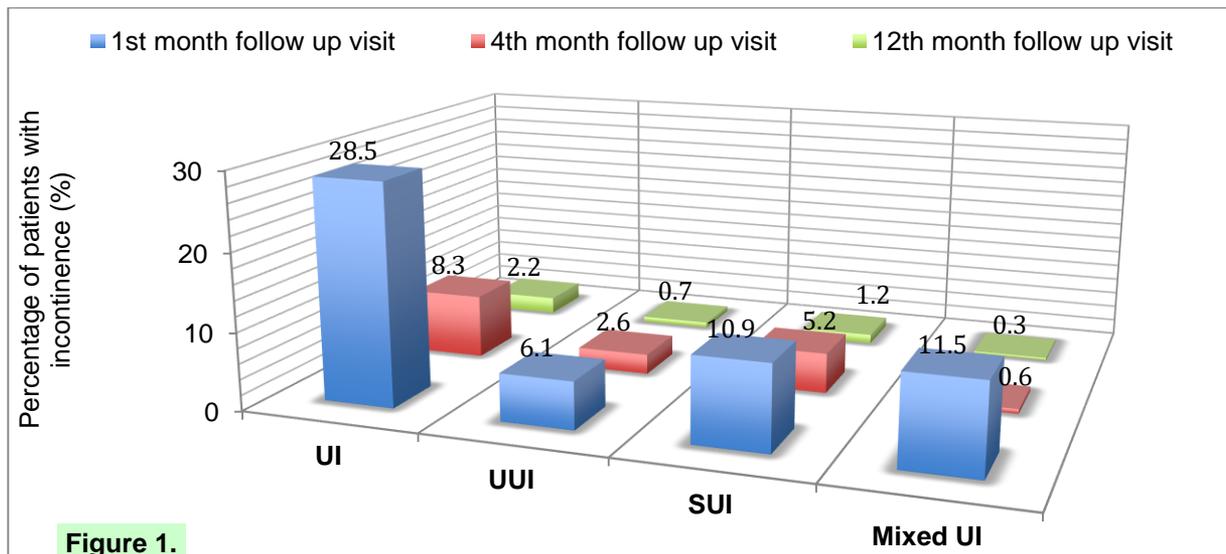
Learning curve of HoLEP is associated with significant impact on early postoperative urine continence. First 20 cases are associated with higher risk of prolonged UI. Cases density of 7 procedures on monthly basis for surgeon are associated with less incidence of prolonged UI at 4 months. At one year most cases of UI recover and older patients are at higher risk for anti-incontinence surgery.

### **Concluding message**

Postoperative UI following HoLEP was significantly affected by learning curve however, majority of cases recover by time and pelvic floor exercise.

Older patients have lesser propensity for continence recovery.

### **Funding** NONE



**Figure 1.**

UI; urinary incontinence, UUI; Urge urine incontinence, SUI; stress urine incontinence, NR; not reported

<b>Table 2.</b>	<b>No UI at 4 months (287)</b>	<b>UI at 4 months (26)</b>	<b>P</b>
Age at time of surgery (mean $\pm$ SD in years)	68.2 $\pm$ 7	66.6 $\pm$ 6	0.2
BMI (mean $\pm$ SD)	30 $\pm$ 11	29 $\pm$ 4	0.6
Number of patients with ASA score equals (III). No (%)	84 (95.5)	4 (4.5)	0.06
Number of patients with Diabetes Mellitus. No (%)	96 (97)	3 (3)	0.06
Indications of surgery. No (%)			<b>0.01</b>
• Indwelling urinary catheter for acute urine retention	132 (93)	10 (7)	
• LUTs refractory to medical treatment	128 (92.1)	11 (7.9)	
• Hematuria of prostatic origin	22 (84.7)	4 (15.3)	
Preoperative PSA (median, range in ng/dl)	6.8 (1-99)	5.9 (1.8-34)	0.4
Preoperative prostate size by TRUS (mean $\pm$ SD in ml)	135 $\pm$ 55	125 $\pm$ 47	0.3
Preoperative positive urine culture. No (%)	115 (94.3)	7 (5.7)	0.2
Surgeon. No (%)			<b>0.001</b>
• A	202 (95.3)	10 (4.7)	
• B	56 (87.5)	8 (12.5)	
• C	29 (78.4)	8 (21.6)	
Number of previously performed tasks (median, range)	63 (0-211)	20 (0-169)	<b>0.000</b>
Case density; cases done per month (median, range)	7 (1-16)	3.5 (1-16)	<b>0.003</b>
Stages of learning curve. No (%)			<b>0.001</b>
• First 20 cases	48 (80)	12 (20)	
• After first 20 cases	239 (94.5)	14 (5.5)	
Stages of learning curve. No (%)			<b>0.003</b>
• First 50 cases	118 (86.2)	19 (13.8)	
• After first 50 cases	169 (96)	7 (4)	
Operative time (mean $\pm$ SD) min	104 $\pm$ 46	126 $\pm$ 35	<b>0.02</b>
Laser to prostate ratio (median, range) KJ/gm	2.1 (0.5-18)	1.8 (1.1-6)	0.5
Resected prostate tissue weight (median, range) gms	65 (14-230)	72 (28-194)	0.9
Percent reduction of postoperative PSA (mean $\pm$ SD) %	82 $\pm$ 10	82 $\pm$ 20	0.4

#### References

1. Baazeem, A. S. Elmansy, H. M. Elhilali, M. M. Holmium laser enucleation of the prostate: modified technical aspects. BJU Int. 105 (5) 584-5. 2010
2. Abrams, P. Cardozo, L. Fall, M. Griffiths, D. Rosier, P. Ulmsten, U. Van Kerrebroeck, P. Victor, A. Wein, A. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. Urology. 61 (1) 37-49. 2003

#### Disclosures

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