

## OUTCOME OF EJACULATION PRESERVING TRANS URETHRAL PROSTATECTOMY (EPTURP)

By

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### ABSTRACT

**Background:** Bladder outlet obstructions (BOO) are one of the major disorders in the aging male. The most common etiology of BOO in elderly men above the age of 60 years is benign prostatic hyperplasia, but younger men (< 50 years old) can also experience subvesical obstruction from a small but obstructive prostate. Surgical intervention (TURP) after failure of first-line treatment can achieve highly satisfying symptomatic and functional outcomes in patients with BOO. Retrograde ejaculation is one of the most common complications in benign prostatic hyperplasia (BPH) surgery. Surgeons are concerned about this complication when patients are sexually active.

**Objective:** To evaluate the efficacy of ejaculation preserving TURP (epTURP) in relation to functional results.

**Patients and Methods:** Thirty one patients with bladder outlet obstruction due to clinically diagnosed BPH were enrolled in our prospective study which was carried out at the Urology Department, Al-Azhar University, during the period from January 2017 to September 2019, undergoing (epTURP). They were evaluated for preservation of ante grade ejaculation along with the functional outcome of this technique after 1, 3, and 6 months of post-operative follow up.

**Results:** The complications such as stress incontinence, urethral stricture and bladder-neck contracture were not recorded in our studied patients. Three patients (9.7%) did not ejaculate on follow up after epTURP at 1, 3, 6 months. We considered the cause of insufficient preservation of the safety area of the ejaculatory ducts. In our cases, there was a failed case did not void after removal of catheter, and needed reintervention by traditional TURP. The decision of retreatment of the failed patient by traditional TURP was done by Al-Hussein Department after failure of epTURP to relieve BPH obstruction. We considered the cause as imperfect resection of the supra montanal tissue.

**Conclusion:** The epTURP technique developed with the aim of preserving ante grade ejaculation for patients with obstruction manifestations due to benign prostatic enlargement, with failure of medical treatment to relieve that obstruction, and those patients who hope of preserving ejaculation for sexual pleasure, psychological satisfaction, or to gain pregnancy. The results from this study may underline the necessity of reviewing the old concept of ejaculation physiology.

**Keywords:** Bladder outlet obstructions (BOO), benign prostatic hyperplasia (BPH), ejaculation preserving trans urethral resection of prostate (epTURP).

### INTRODUCTION

Bladder outlet obstructions (BOO) are one of the major disorders in the aging male. The most common etiology of BOO

in elderly men above the age of 60 years is benign prostatic hyperplasia, but younger men (< 50 years old) can also experience subvesical obstruction from a

small but obstructive prostate (*Dogan et al., 2011*). Surgical intervention (TURP) after failure of first-line treatment can achieve highly satisfying symptomatic and functional outcomes in patients with BOO. Retrograde ejaculation is one of the most common complications in benign prostatic hyperplasia (BPH) surgery. Surgeons are concerned about this complication when patients are sexually active. Transurethral prostatectomy (TURP) causes retrograde ejaculation in up to 70% of cases. The use of alpha-receptor antagonists is also known to possibility cause a loss in antegrade ejaculation (*Gilling et al., 2018*). However, clinical evidence has indicated that bladder neck closure may not be important for maintaining antegrade ejaculation (*Paul et al, 2014*). Clinical findings have shown patients with retrograde ejaculation after retroperitoneal lymphadenectomy for testis tumor with a closed bladder neck due to sympathetic chain injury (*Hsiao et al., 2012*).

Patients who sustain orthostatic ejaculation after prostate sparing cystectomy and neobladder formation (*Girgin et al., 2013*), implying that bladder neck closure may not be concerned with orthostatic ejaculation. The histopathological confirmation of the ejaculatory ducts and the surrounding ductus ejaculatorius, which is expected to have a major role for expulsion (*Selman et al, 2011*). On the basis of these new findings, modified techniques for ejaculation preservation have been introduced in BPH surgeries (*Chandrasekera et al., 2012*). All the approaches spare the ejaculatory hood, especially the sufficient supramontanal tissue, about 1cm from the

verumontanum. These observations identified the smooth muscle musculus ejaculatorius as a mandatory to the process of ejaculation (*Saladin et al., 2014*).

**The present work aimed to** evaluate the efficacy of ejaculation preserving TURP (epTURP) in relation to functional results.

## PATIENTS AND METHODS

Thirty one patients with bladder outlet obstruction due to clinically diagnosed BPH were enrolled in the study which was carried out at the Urology Department, Al-Azhar University, during the period from January 2017 to September 2019.

**Study design:** A single-site, prospective, randomized clinical study.

**Inclusion criteria:** Male patients with enlarged prostate indicated for TURP, patients with severe lower urinary tract symptoms (LUTS) according to IPSS score, IPSS >14, Q max (maximum urinary flow rate)  $\leq$  10 ml/second, plus failure of medical treatment for symptoms of BPH, and sexually active with antegrade ejaculation.

**Exclusion criteria:** Major psychiatric and somatic diseases and the use of drugs that affect sexual function, patients with impaired erection, patients with no ejaculation, patients with documented or suspected prostate cancer, patients with neurogenic bladder, voiding dysfunction, urethral strictures and malignancies of the upper or lower urinary tract, prostates sized more than 80 CC, severe comorbidities; as abnormal coagulation profile, or high surgical risk patients.

**All patients were submitted to a detailed evaluation including:** Detailed medical history, physical examination, digital rectal examination, focused neurologic examination, international prostate symptoms score (I-PSS-0/35), before and after epTURP, quality of life bothersome score (0/6), International Index of Erectile Function (IIEF), before and after epTURP, uroflowmetry, before and after epTURP, laboratory tests: urine analysis, culture and sensitivity tests, if needed, semen volume estimation, before and after epTURP, plus other routine preoperative laboratory tests.

We categorized the ejaculation results as 'no change', 'decreased' or 'vanished'. The success of ejaculation preservation was defined as the 'no change' or 'decreased' but subjectively considerable antegrade ejaculate state at the last follow-up.

**Imaging tools:** Ultrasound of the abdomen and pelvis. To measure post voiding residual urine, transrectal ultrasound of the prostate was done to measure the actual prostatic volume.

The study protocol had been approved from the local ethical committee at our hospital and a written informed consent was obtained from all patients. All patients were given broad spectrum antibiotics preoperative. Patient lied in the lithotomy position under spinal anesthesia. Diagnostic urethrocystoscopy was done for evaluating prostate size and any intravesical abnormality.

The epTURP Procedure was undertaken according to *Alloussi et al. (2014)* where preserved 1 cm proximal of the verumontanum and 2–3 mm gap bilaterally from the verumontanum

(paracollicular tissue) to preserve ejaculatory ducts, then complete TURP as traditional technique.

**All patients were intraoperatively observed for the following parameters:** Operative time, blood transfusion if needed, intraoperative field of vision (clarity of field of vision), perforation, extravasation, and any other practical observations.

**Early postoperative evaluation:** Bed-side assessment focused on volume of the irrigant. post-operative bleeding (severity and duration), hospital stay, duration of catheter indwelling, clot retention, re-hospitalization for secondary hemorrhage or acute retention of urine and early severe irritative symptoms.

Assessment of the results was done by following up the patients postoperatively at 1, 3, 6 months by IPSS, IIEF, ultrasound postvoiding residual urine, uroflowmetry, and semen volume estimation.

**Statistical Analysis:** Data were collected, revised, coded and entered to the Statistical Package for Social Science (IBM SPSS) version 23. The quantitative data were presented as mean, standard deviations and ranges when their distribution found parametric and also qualitative data were presented as numbers and percentages. The comparison between more than two paired groups with quantitative data and parametric distribution were done by using **Repeated Measures ANOVA test** followed by post hoc analysis using Bonferoni correction when the results were found significant.

**Spearman correlation coefficients** were used to assess the correlation

between two quantitative parameters in the same group. The confidence interval was set to 95% and the margin of error

accepted was set to 5%. So, the p-value was considered significant when P-value < 0.05.

## RESULTS

Overall, 34 consecutively enrolled patients with BOO and with the ability to preserve antegrade ejaculation were included in the study. Three patients discontinued, two died after one, and five months of the operation due to ischemic coronary heart attack, and the third was diagnosed prostate cancer on pathological examination of the prostatic chips after TURP.

The patients were treated with transurethral resection of the prostate using monopolar TURP with glycine irrigation solution. Data were collected in the pre and postoperative period at 1, 3, 6, months. The preoperative and postoperative data were analyzed and compared.

**Demographic data of the 31 studied patients:** The patients aged on average

58.97 years, and had a standard deviation 6.06. The patients had a prostatic volume on average 62.29 ml, with a standard deviation 13.11. Anterograde ejaculation was preserved in 27 patients of the 31 patients (87%). Three patients did not ejaculate on follow up after epTURP at 1, 3, 6 months, and 27 patients ejaculate semen volume ranged from 0.5 to 3.5 ml. the 4th failed case did not void after removal of the catheter, and needed reintervention by the conventional standard TURP.

There was a statistically significant decrease in semen volume in the studied patients at 1 month post-operative ( $1.40 \pm 0.84$ ), than before operation ( $2.19 \pm 0.82$ ), then showed improvement at 3, 6 months post-operative ( $1.81 \pm 1.05$ ), ( $1.89 \pm 1.06$ ) respectively (**Table 1**).

**Table (1): The change in semen volume before and post epTURP at 1, 3, and 6 months**

Semen volume	Range	Mean $\pm$ SD	P-value <sup>1</sup>	P <sup>2</sup>	P <sup>3</sup>	P <sup>4</sup>
Before operation	1 – 4	2.19 $\pm$ 0.82	--	0.001	0.001	0.005
1 month	0 – 3	1.40 $\pm$ 0.84	0.000			
3 months	0 – 4	1.81 $\pm$ 1.05	0.000			
6 months	0 – 4	1.89 $\pm$ 1.06	0.002			
Repeated measures ANOVA	42.293					
P-value <sup>0</sup>	< 0.001					

P<sup>0</sup>: Comparison between the four times using repeated measures ANOVA followed by post hoc analysis by Bonferoni correction

P<sup>1</sup>: Each time vs before operation; P<sup>2</sup>: 1 month vs 3 months; P<sup>3</sup>: 1 month vs 6 months; P<sup>4</sup>: 3 month vs 6 months

There was a statistically significant increase in Q max in the studied patients at 1 month ( $15.76 \pm 4.98$ ) and at 3 months ( $17.73 \pm 5.96$ ) and also at 6 months

( $18.60 \pm 5.93$ ) than before operation ( $4.84 \pm 3.82$ ) (**Table 2**).

**Table (2): The change in Q max before and post epTURP at 1, 3, and 6 months**

Q max	Range	Mean ± SD	P-value <sup>1</sup>	P <sup>2</sup>	P <sup>3</sup>	P <sup>4</sup>
Before operation	0 – 10 ml/s	4.84 ± 3.82	--	0.001	0.001	0.017
1 month	0 – 22 ml/s	15.76 ± 4.98	0.000			
3 months	0 – 25 ml/s	17.73 ± 5.96	0.000			
6 months	0 – 25 ml/s	18.60 ± 5.93	0.000			
Repeated measures ANOVA	163.147					
P-value <sup>0</sup>	< 0.001					

P<sup>0</sup>: Comparison between the four times using repeated measures ANOVA followed by post hoc analysis by Bonferoni correction

P<sup>1</sup>: Each time vs before operation; P<sup>2</sup>: 1 month vs 3 months; P<sup>3</sup>: 1 month vs 6 months; P<sup>4</sup>: 3 month vs 6 months

There was a statistically significant decrease in Post voiding residual urine in the studied patients at 1 month (45.90 ± 53.09), 3 months (40.35 ± 55.87) and also at 6 months (34.29 ± 49.59) than before operation (166.87 ± 90.67) (Table 3).

**Table (3): Postvoiding residual urine before and post epTURP at 1, 3, and 6 months**

Post voiding residual urine	Range	Mean ± SD	P-value <sup>1</sup>	P <sup>2</sup>	P <sup>3</sup>	P <sup>4</sup>
Before operation	52 – 430ml	166.87 ± 90.67	--	0.003	0.001	0.001
1 month	18 – 270ml	45.90 ± 53.09	0.000			
3 months	12 – 270ml	40.35 ± 55.87	0.000			
6 months	12 – 250ml	34.29 ± 49.59	0.000			
Repeated measures ANOVA	65.253					
P-value <sup>0</sup>	< 0.001					

P<sup>0</sup>: Comparison between the four times using repeated measures ANOVA followed by post hoc analysis by Bonferoni correction

P<sup>1</sup>: Each time vs before operation; P<sup>2</sup>: 1 month vs 3 months; P<sup>3</sup>: 1 month vs 6 months; P<sup>4</sup>: 3 month vs 6 months

There was a statistically significant decrease in IPSS in the studied patients at 1 month (7.45 ± 6.40), at 3 months (5.29 ± 6.72) and also at 6 months (3.74 ± 6.88) than before operation (23.10 ± 4.83) (Table 4).

**Table (4): IPSS before operation and follow up after 1, 3, and 6 months**

IPSS	Range	Mean ± SD	P-value <sup>1</sup>	P <sup>2</sup>	P <sup>3</sup>	P <sup>4</sup>
Before operation	14 – 30	23.10 ± 4.83	--	0.001	0.001	0.001
1 month	2 – 30	7.45 ± 6.40	0.000			
3 months	1 – 30	5.29 ± 6.72	0.000			
6 months	0 – 30	3.74 ± 6.88	0.000			
Repeated measures ANOVA	207.751					
P-value <sup>0</sup>	<0.001					

P<sup>0</sup>: Comparison between the four times using repeated measures ANOVA followed by post hoc analysis by Bonferoni correction

P<sup>1</sup>: Each time vs before operation; P<sup>2</sup>: 1 month vs 3 months; P<sup>3</sup>: 1 month vs 6 months; P<sup>4</sup>: 3 month vs 6 months

There was no significant change in IIEF in the studied patients at 1 month ( $55.61 \pm 16.55$ ), 3 months ( $57.65 \pm 16.64$ )

and also at 6 months ( $59.48 \pm 16.94$ ) than before operation ( $60.42 \pm 8.46$ ) (**Table 5**).

**Table (5): IIEF before operation and follow up after 1, 3, and 6 months**

IIEF	Range	Mean $\pm$ SD	P-value <sup>1</sup>	P <sup>2</sup>	P <sup>3</sup>	P <sup>4</sup>
<b>Before operation</b>	<b>44 – 73</b>	<b>60.42 <math>\pm</math> 8.46</b>	<b>--</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
<b>1 month</b>	<b>0 – 72</b>	<b>55.61 <math>\pm</math> 16.55</b>	<b>0.050</b>			
<b>3 months</b>	<b>0 – 72</b>	<b>57.65 <math>\pm</math> 16.64</b>	<b>0.266</b>			
<b>6 months</b>	<b>0 – 72</b>	<b>59.48 <math>\pm</math> 16.94</b>	<b>0.718</b>			
<b>Repeated measures ANOVA</b>	<b>2.870</b>					
<b>P-value<sup>0</sup></b>	<b>0.096</b>					

P<sup>0</sup>: Comparison between the four times using repeated measures ANOVA followed by post hoc analysis by Bonferoni correction

P<sup>1</sup>: Each time vs before operation; P<sup>2</sup>: 1 month vs 3 months; P<sup>3</sup>: 1 month vs 6 months; P<sup>4</sup>: 3 month vs 6 months

In this study, during the early postoperative period, only 7 patients (22.6%) had clot urinary retention in the presence of urethral catheter. all of them managed by flushing of urethral catheter without complication. 9 patients (29%) suffered from early severe irritative symptoms following catheter removal, in the form of burning micturition, urgency and urge incontinence, 3 of these patients treated by anticholinergics for 10 days, the

remaining patients had mild to moderate dysuria and resolved with anti-inflammatory medication for one week. One patient (3.2%) had been re-hospitalized later after discharge due to secondary hemorrhage and he was managed by giving them IV fluid, IV antibiotics and hemostatic measures, no patient necessitated blood transfusion. No post TUR syndrome is recorded in our patients (**Table 6**).

**Table (6): Early postoperative complications**

Early postoperative complications	NO. of affected patients	Percentage
<b>Clot retention</b>	<b>7 patients</b>	<b>22.6%</b>
<b>Early severe irritative symptoms</b>	<b>9 patients</b>	<b>29%</b>
<b>Re-hospitalization for secondary Hge</b>	<b>One patient</b>	<b>3.2%</b>
<b>Post TUR syndrome</b>	<b>0</b>	<b>0</b>

During follow up visits later on after 1, 3 and 6 months, our patients did not report any late complications as urethral stricture, bladder neck sclerosis. Three patients (9.7%) can't ejaculate on follow up after epTURP at 1,3,6 months. the 4th failed case did not void after removal of

catheter, and needed reintervention by traditional TURP. Early post operatively two patients complained of mild weakness of erection at one month post operatively, who improved at 3 months and completely cured at 6 months of follow up (**Table 7**).

**Table (7): Late postoperative complications.**

late postoperative complications:-	NO. of affected patients	Percentage
Stress incontinence	2 patients	6.5%
Urethral stricture, bladder neck sclerosis	0	0%
Loss of ejaculation	3 patients	9.7%
Loss of erection	0	0
Retention	1	3.2%

### DISCUSSION

According to (EAU) the European Association of Urology Guidelines, the monopolar transurethral resection of the prostate (TURP) still represents the “gold standard” therapeutic approach in cases of average size BPH (between 30 and 80 mL) with indication for surgery (Gravas *et al.*, 2019), with a possibility of loss of antegrade ejaculation reaching 70% of cases, the use of alpha-receptor antagonists is also known to possibly cause a loss in antegrade ejaculation (Gilling *et al.*, 2018), consequently the epTURP technique was developed with the aim of preserving antegrade ejaculation.

Regarding initial data, the average age of our patients was 59 years. The average prostatic volume was 62.29 ml. It’s comparable with Alloussi *et al.* (2014) the patients were aged on average 59.5 years and had average prostatic volume of 60.4 ml. Kim *et al.* (2014) stated that age average was 67 years and had an average prostatic volume 62.5 ml.

In our study, antegrade ejaculation was preserved in 87% with antegrade ejaculation ability prior undergoing the epTURP procedure, at 6 months of the last follow up versus 20% after conventional TURP, in whom mostly the surgeons unintentionally preserved the area of ejaculatory ducts to preserve the external urinary sphincter (Jaidane *et al.*, 2010).

The same technique was described by Mohanned (2018) resulted in the maintenance of antegrade ejaculation in over 96% of treated patients. A comparable technique was prescribed by Kim *et al.* (2014) with 46.2% preservation of antegrade ejaculation. They used holmium laser enucleation of prostate with the same technique of preservation of ejaculatory ducts and 1cm safety area proximal to verumontanum of prostate.

In our study, there was some decrease in semen volume at one month postoperatively, then improved at six months of follow up of our patients. Alloussi *et al.* (2014) and Arvind *et al.* (2018) showed no interest to measure semen volume accurately pre and post operatively, and evaluated their results of ejaculation preservation by IIEF, and the patient history of the ability to ejaculate.

Data on efficacy had been measured by the impact on, Q max, post voiding residual urine, IPSS, IIEF as well as QoL score, compared to baseline, was provided at follow-up periods ranging from 1 to 6 months.

In agreement with the other studies, our results showed that, there was a statistically significant increase in Q max in the studied patients post operatively at 1, 3, and 6 months than before operation. Mohanned (2018) showed that Q max increased from 5.4 ml/s to 21 ml/s. Also,

*Alessandro et al. (2013)* showed more better improvement in Q max, which increased from 7.4 ml to 23.6 ml/s at one year follow-up.

In our study, there was a statistically significant decrease in (PVR) post voiding residual urine in the studied patients post operatively, at 1, 3 and at 6 months than before operation.

Our study was comparable to *Kim et al. (2014)*, where PVR dropped from 103 ml pre operatively to 10.7 ml post epTURP. *Mohanned (2018)* showed PVR decreased from 150 ml pre operatively to 22 ml post operatively at 3 months.

Our study showed a statistically significant decrease in IPSS in the studied patients at 1, 3 and at 6 months than before operation. Similar results were recorded in *Alessandro et al. (2013)*, where IPSS total score dropped from 21.4  $\pm$ 10.0 to 5.3  $\pm$ 3.0 at 3 months post operatively. Also *Alloussi et al. (2014)* reported a drop in IPSS total score from 22.8  $\pm$ 4.8 preoperatively to 4.5  $\pm$ 3.3, post epTURP.

With the agreement of the aim of our study, there was no significant change in IIEF in the studied patients at 1, 3 and at 6 months than before operation. No erectile dysfunction was recorded at the end of follow up of the patients at 6 months, while early post operatively two patients complained of mild weakness of erection at one month post operatively, who improved at 3 months and completely cured at 6 months of follow up. *Alloussi et al. (2014)* stated that, all parameters of IIEF were not affected. Also, *Arvind et al. (2018)* recorded normal sexuality and the relationships in general improved.

Early post operatively, two patients in our study complained of mild weakness of erection at one month post operatively, who improved at 3 months and completely cured at 6 months of follow up, we considered a temporary nerve insult from the thermal effect of the monopolar energy may be the cause, which may need more research.

In agreement with our study, *Frieben et al. (2010)* showed an improvement of the erectile function in men affected by erectile dysfunction and LUTS associated to BOO after endoscopic prostatectomy, no erection impairment was recorded in *Alessandro et al. study (2013)*, *Amang and Henry (2015)* reported preservation of sexual function after epTURP.

As a normal sequel to the success of the new technique (epTURP) to relieve the distress and the complaint of the benign enlarged prostate, and preserve antegrade ejaculation and erectile function, there was a statistically significant improvement in QOL in the studied patients at 1, 3 and 6 months than before the operation.

The complications such as stress incontinence, urethral stricture and bladder-neck contracture were not recorded in our studied patients. 9.7% did not ejaculate on follow up after epTURP at 1, 3, 6 months. There was a failed case that did not void after removal of the urethral catheter, and needed reintervention by the traditional TURP. We considered the cause as imperfect resection of supra montanal tissue.

## CONCLUSION

The epTURP technique appeared as an effective minimally invasive procedure for patients with severe urinary obstructive symptoms due to benign prostatic enlargement and hope of preserving ejaculation. Longer follow up of the cases more than 6 months postoperatively may be required to assess the possibility of obstructive symptoms recur with the new technique of epTURP.

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## نتيجة استئصال البروستاتا بالمنظار مع الحفاظ على القذف عند الرجال

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**خلفية البحث:** يعد تضخم البروستاتا الحميد السبب الأكثر شيوعا لاحتباس البول وصعوبة التبول عند الرجال فى مراحل العمر المتقدمة، ولكن تضخم البروستاتا الحميد يمكن أن يحدث فى رجال تقل أعمارهم عن الخمسين عاما والتدخل الجراحى لاستئصال البروستاتا بالمنظار يحدث ارتجاعا للسائل المنوى بنسبة تصل الى 70%، مع العلم أن العلاج الدوائى لتضخم البروستاتا الحميد باستخدام مضادات مستقبلات ألفا يسبب أيضا ارتجاع السائل المنوى عند القذف بنسبة كبيرة.

**الهدف من البحث:** تقييم مدى فاعلية استئصال البروستاتا بالمنظار بالأسلوب الجديد الذى يحافظ على القذف عند الرجال.

**المرضى وطرق البحث:** شملت الدراسة عدد 31 مريضا يعانون من أعراض تضخم البروستاتا الحميد الذى لا يستجيب للعلاج الدوائى، وتم إجراء استئصال البروستاتا بالمنظار بأسلوب الحفاظ على القذف فى الفترة ما بين يناير 2017 حتى سبتمبر 2019 بمستشفى الحسين الجامعى، وتم متابعة الحالات بعد إجراء العملية فى العيادة الخارجية بعد شهر وثلاثة أشهر وستة أشهر، وكان الحكم على نجاح عملية المنظار بقياس تحسن دفع البول والتخلص من كمية البول المتبقية فى المثانة بعد التبول، والحفاظ على كمية مقبولة من السائل المنوى المقذوف.

**نتائج البحث:** كان متوسط أعمار مرضى البروستاتا 59 عاما (من 49 حتى 72 عام) وكان متوسط حجم البروستاتا 62.29 ملم (من 40-80 ملم) وتمت

متابعة المرضى حتى 6 أشهر من إجراء استئصال البروستاتا بالمنظار، وقد لوحظ تخلص المرضى من أعراض البروستاتا ماعدا مريض واحد اشتكى من احتباس بولى بعد رفع القسطرة واحتاج إلى استئصال البروستاتا بالمنظار بالأسلوب التقليدى، وثلاثة مرضى لم يستطيعوا قذف السائل المنوى بعد متابعتهم بستة أشهر من العملية.

**الاستنتاج:** أسلوب استئصال البروستاتا بالمنظار مع الحفاظ على القنوات القاذفة للمنى تعد عملية ناجحة للحفاظ على القذف عند الرجال الذين يعانون من تضخم البروستاتا الحميد ولايستجيبون للعلاج الدوائى ويرغبون فى الحفاظ على القذف المنوى.

**الكلمات الدالة:** احتباس البول فى المثانة, تضخم البروستاتا الحميد و استئصال البروستاتا بالمنظار مع الحفاظ على القنوات القاذفة.