

# Photoselective Vaporisation of the Prostate in Men Unfit For Transurethral Resection of the Prostate - Case Report

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## Abstract

Transurethral resection of the prostate (TURP) is the gold standard treatment for bladder outlet obstruction. However, newer modalities, such as photoselective vaporisation of the prostate (PVP) have some significant advantages over TURP. Men who are candidates for transurethral resection of the prostate are suitable candidates PVP. The converse is not necessarily true. Patients who have an absolute requirement for anticoagulation can still be treated with PVP. We present a case study of two men at our centre with refractory urinary retention were considered unfit for TURP; both sought treatment with PVP. These men had an American Society of Anaesthesiology (ASA) Score of 4 and were also fully anti-coagulated with coumadin. Treatment was performed with the 120W lithium triborate laser. Both men successfully re-established urethral voiding and have maintained a good clinical outcome at over 2 years. This case report demonstrates that PVP may be performed safely and efficaciously in men despite medical co-morbidities, and whilst anti-coagulated.

## INTRODUCTION

Men with refractory urinary retention and significant medical co-morbidities pose a difficult management dilemma. These high risk patients are frequently deemed unsuitable for TURP and long term urinary catheterisation is necessary. This case report discusses the successful treatment of two men, who had been rejected for TURP on medical grounds. These men were treated with photoselective vaporisation of the prostate (PVP); a 120W lithium triborate laser was used.

## CASE REPORT

### CASE 1

An 82 year old man was referred to our institution for consideration of laser prostate surgery. He had developed urinary retention 4 months previously and had been considered unfit for TURP. A suprapubic catheter was in place. His medical co-morbidities included ischemic cardiomyopathy, left ventricular aneurysm and chronic renal failure. This patient was therapeutically anti-coagulated with coumadin, which was continued during his procedure. A trans-rectal ultrasound estimated his prostatic volume at 49cc. On transabdominal ultrasound, a large bladder diverticulum had been identified with a 600mL capacity.

General anaesthesia with endotracheal intubation was

undertaken. Anaesthetic agents used included fentanyl 50 mcg, thiopentone 150mg, vecuronium 6mg and a remifentanyl infusion running at 10mcg/kg/hour. There were no adverse anaesthetic related events.

A satisfactory prostatic channel was created using a 23Ch continuous flow laser cystoscope. A total of 200kJ of energy was used. The operating time, defined as cystoscope insertion to completion of the procedure was 40 minutes. The laser fibre usage on the laser machine was 27 minutes. No urethral catheter was placed at completion of the procedure as the suprapubic catheter was insitu.

The patient was admitted for routine monitoring in the intensive care unit (ICU) overnight and was able to be discharged to the regular ward in less than 24 hours. No complications from the surgery were encountered in the peri-operative period. The man was discharged on the 3<sup>rd</sup> post operative day with the SPC in place. The post operative haemoglobin (Hb) was > 100 g/L and the sodium level was > 137 mmol/L. Post void residuals measured through the SPC were consistently 200mL and the decision was made to remove the SPC 10 weeks following PVP.

On follow up at 3 months, his flow study demonstrated a peak flow of 26mL/s with a voided volume of 384mL. Ultrasound revealed a residual volume of 215mL. His

International Prostate Symptom Score was 3 (out of 35) and Quality of Life Index was 0 (out of 6). At telephone consultation at 29 months he reported good urinary stream and satisfaction with the procedure. He had had no complications such as acute urinary retention or urinary tract infection.

## **CASE 2**

An 80 year old man was referred to our institution for consideration of laser prostatectomy. A urethral catheter was in place due to urinary retention. The patient had very significant discomfort from the urethral catheter. He also had significant medical co-morbidities including severe obstructive sleep apnoea, ischemic heart disease and had recurrent deep vein thrombosis which necessitated therapeutic anticoagulation with coumadin. His most recent episode of deep vein thrombosis was only a few weeks earlier. Trans-rectal ultrasound revealed a prostate volume of 120cc.

General anaesthesia with endotracheal intubation was undertaken. Anaesthetic agents used included suxamethonium 125 mg, propofol 110mg and vecuronium 15mg. There were no adverse anaesthetic related events.

Using a 23Ch continuous flow laser cystoscope, a total of 550kJ of energy was used to create a satisfactory channel. The procedure was extremely difficult due to the bladder capacity having been reduced to 150mL with chronic catheterisation. The operating time as defined by cystoscope insertion to completion of the procedure was 109 minutes. Laser fibre time as indicated on the laser machine was 78 minutes. The patient was admitted for routine monitoring in the ICU overnight and no complications were encountered in the peri-operative period. The post operative Hb was > 100 g/L and the sodium level was > 137 mmol/L. He underwent a successful trial of void the following morning and was discharged home that day.

On follow up at 3 months, his flow study found a peak flow of 12mL/s on a voided volume of 160mL and on ultrasound he had a residual of 76mL. His International Prostate Symptom Score was 2 (out of 35) and Quality of Life Index was 0 (out of 6). At telephone consultation at 34 months he reported good urinary stream and satisfaction with the procedure. There had been no complications such as acute urinary retention or urinary tract infection.

## **DISCUSSION**

The high risk men discussed above, were unable to tolerate catheterisation to the extent that they were prepared to accept the potential mortality of surgical intervention. Further, they had already been rejected for treatment by TURP in tertiary referral teaching hospitals. At the time of treatment, our centre had the only 120W lithium triborate laser.

Both men had been classified as having an American Society of Anaesthesiology (ASA) Score of 4; which refers to a patient with severe systemic disease that is a constant threat to life. The ASA Score is the standard for defining an individual's anaesthetic risk. There have been no reports of the use of PVP using the 120W lithium triborate laser specifically in men with an ASA Score of 4. Lower power PVP using the 80W KTP laser has been reported in men with medical co-morbidity with an ASA of 3 and above[1]. However this study did not define the number of men with ASA greater than 3.

The two men in this case report were able to safely undergo surgery with PVP in spite of their significant medical co-morbidities. Neither patient required a blood transfusion. Further, neither patient developed a medical complication from their procedure despite being therapeutically anti-coagulated. Anti-coagulation with coumadin has been shown to be safe in men undergoing PVP [2], however it is a contraindication for TURP.

An additional concern was the intravascular absorption of irrigation fluid during the procedure as these men had compromised cardiac function. The intravascular absorption of irrigation fluid during TURP has been shown to be approximately 700mL[3]. However, studies have demonstrated no significant intravascular absorption of irrigation fluid with PVP[4-6]. Thus for men with significant cardiovascular morbidity, in whom an increase in intravascular volume could precipitate cardiac failure, PVP potentially represents a safer option to conventional TURP.

A limitation of this case report is the absence of objective measures of outcome on longer term follow up. Due to significant medical co-morbidities, it becomes increasingly difficult for these men to travel to medical appointments. We did not consider it reasonable to request these compromised men to travel to a follow up appointment to perform urinary flow studies for the purposes of this report. Additionally, drinking a large volume of fluid for the flow study may

precipitate congestive cardiac failure in men with significantly compromised cardiac function.

Larger studies with greater numbers of patients are required to ensure the safety of PVP in patients with bladder outlet obstruction and an ASA score of 4. However this case report highlights a treatment alternative for high risk patients not suitable for TURP.

### References

1. Reich, O., Bachmann, A., Siebels, M., Hofstetter, A., Stief, C.G., and Sulser, T. (2005) High power (80 W) potassium-titanyl-phosphate laser vaporization of the prostate in 66 high risk patients. *J Urol* 173, 158-160.
2. Woo, H., Reich, O., Bachmann, A., Choi, B., Collins, E., de la Rosette, J., Gomez Sancha, F., Muir, G., and Tabatabaei, S. (2008) Outcome of GreenLight HPS 120-W Laser Therapy in Specific Patient Populations: Those in Retention, on Anticoagulants, and with Large Prostates (>80 ml). *Eur Urol Supp* 7, 378-383.
3. Drobin, D., Hjelmqvist, H., Piros, D., and Hahn, R.G. (2008) Monitoring of fluid absorption with nitrous oxide during transurethral resection of the prostate. *Acta Anaesthesiol Scand* 52, 509-513.
4. Malek, R.S., Barrett, D.M., and Kuntzman, R.S. (1998) High-power potassium-titanyl-phosphate (KTP/532) laser vaporization prostatectomy: 24 hours later. *Urology* 51, 254-256.
5. Malek, R.S., Kuntzman, R.S., and Barrett, D.M. (2000) High power potassium-titanyl-phosphate laser vaporization prostatectomy. *J Urol* 163, 1730-1733.
6. Barber, N.J., Zhu, G., Donohue, J.F., Thompson, P.M., Walsh, K., and Muir, G.H. (2006) Use of expired breath ethanol measurements in evaluation of irrigant absorption during high-power potassium titanyl phosphate laser vaporization of prostate. *Urology* 67, 80-83.

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