Aim: To evaluate the peri-operative morbidity of men taking clopidogrel who underwent photoselective vaporisation of the prostate (PVP).

Patients and Methods: A prospective database was collected. Between March 2005 and July 2010, 480 men underwent PVP. Of these, 18 men underwent PVP treatment while on clopidogrel. The surgery was carried out with either an 80W KTP laser or a 120W lithium triborate laser.

Results: In the peri-operative period there were no complications related to PVP. There were no urinary tract infections, nor did any patient require bladder re-catheterisation. No cardiovascular events were reported within 3 months of the procedure. At 3 months post operatively, the International Prostate Symptom Score±standard deviation had improved from was 17.5±10.6 to 9.2±6.1 \(P<0.05\). While the Quality of Life±standard deviation improved from 4.7±1.2 to 2.2±1.5 \(P<0.01\). The maximum flow rate (Qmax), and post void residual volume (PVR) improved from 6.2±3.0 ml/s to 19.7±9.1 ml/s \(P<0.01\), and 140±102 ml to 59±77 ml \(P<0.05\), respectively.

Conclusions: PVP is a safe and efficacious in the treatment of high risk patients with bladder outlet obstruction. Further, the ability to continue therapeutic anticoagulation and anti-platelet agents, is a significant advantage over Holmium enucleation of the prostate and conventional transurethral resection of the prostate. Larger studies with greater numbers of patients are required prior to PVP becoming the gold standard for high-risk patients with bladder outlet obstruction.

Key Words: Clopidogrel, green light, men’s health, photoselective vaporization, surgery, transurethral resection of prostate, urology

INTRODUCTION

Photoselective vaporization of the prostate (PVP) has been shown to be an effective surgical treatment for benign prostate obstruction.[1] PVP has excellent hemostatic properties due to the uptake of the 532 nm wavelength by oxyhemoglobin. Most publications evaluating prostate surgery in conjunction with anticoagulants evaluate a mixed group of men who were either on aspirin, clopidogrel and coumadin.[2] The numbers of men taking clopidogrel in these studies are generally small. This study evaluates specifically peri-operative morbidity associated with men who were on clopidogrel, and continued on this medication at therapeutic levels during PVP treatment.

MATERIALS AND METHODS

A prospective database of men undergoing PVP was collected from March 2005 to July 2010. This database recorded age,
prostate volume on trans-rectal ultrasound (TRUS), anti-coagulation and anti-platelet medications, operative time, laser energy utilization, post operative duration of hospital stay, catheterization and complications associated with PVP in the first 90 days following surgery. During this time, 480 men underwent PVP treatment. Of this, 18 men had their procedure performed with clopidogrel. No men had clopidogrel ceased in the peri-operative period for the purposes of PVP.

The four men treated prior to November 2006 underwent surgery with the 80W KTP laser. During November 2006, a 120W lithium triborate (LBO) laser was acquired, subsequent to this time all procedures were performed on this machine. The mean age was 78.6 years (range 65 to 88). TRUS prostatic volume was measured in 16 of the 18 men. The mean prostate size was 59.1cc (range 18-150). Five men (36%) were in urinary retention with an indwelling catheter (IDC) in place at the time of the procedure.

All men underwent general anesthesia for their procedure. The procedure was carried out using a standardized technique as previously described by the International Greenlight User’s Group. The lateral lobes of the prostate were initially treated and a working space was created. While establishing a working space, the laser power is set at 80W. Once the working space is established, power was immediately increased to 120W for the remainder of the case. To assist visibility, a standard arthroscopy giving set with a hand pump was used for the 23Ch continuous flow laser cystoscope irrigation. Thus mucosal contact bleeding or vaporization bubbles are dispersed improving visibility.

RESULTS

The mean laser time in this cohort of patients was 47 min (range 15-79). Laser time is recorded by the laser console, and is a cumulative measurement of time spent with the laser activated. The mean energy utilization was 288 kJ (range 32-550).

At the end of the procedure, 17 of the 18 men were catheterized with a 16Ch Bard Biocath 2 way Foley catheter. The mean duration of catheterization in these men was 13.3 h (range 2-20). A 3-way irrigation catheter was used in one patient. Precautionary measures were taken in this man as he had presented in urinary retention and had a prostate volume of 100cc on TRUS. Yet, the duration of catheterization for this man was still only 12 h and thus consistent with the other patients. No patient required a blood transfusion.

In the peri-operative period, there were no complications related to PVP. No patient had a significant drop in hemoglobin (Hb). We defined significant Hb drop as a post operative Hb<100g/l for any patient. No patient had a significant drop in sodium, defined as <130 mmol/l. There were no urinary tract infections, nor did any patient require re-catheterization of the bladder. No cardiovascular events were reported within three months of the procedure.

Follow up at three months was limited. Three patients failed to attend their follow up appointments, and one man declined further follow up. Thus, only 14 of the 18 men attended follow up at three months. International prostatic symptom score (IPSS) was measured at baseline and three months. The mean baseline IPSS±standard deviation was 17.5±10.6. While the mean quality of life (QoL)±standard deviation was 4.7±1.2 at baseline. At three months, both had improved to 9.2±6.1 and 2.2±1.5 respectively. These improvements in IPSS and QoL were statistically significant where P<0.05 and P<0.01 respectively. The maximum flow rate (Qmax), and post void residual volume (PVR) at baseline were 6.2±3.0 ml/s and 140±102 ml respectively. However, at three months the Qmax had increased to 19.7±9.1 ml/s. This improvement was statistically significant with P<0.01. Similarly PVR at three months had significantly reduced to 59±77 ml, P<0.05.

DISCUSSION

Anticoagulant and anti-platelet medication use has increased significantly in recent years. This has added to the complexity of surgery and peri-operative work up. Some medications are prophylactic and therefore can be ceased with impunity. However, with the advent of drug eluting coronary stents, clopidogrel is required for 12 months to prevent occlusion of the stent with clot.

Thus an increased risk of bleeding complications must be weighed against the potential consequences of stopping these medications during the peri-operative period. It is an accepted practice that agents such as clopidogrel and coumadin should be ceased in the peri-operative period prior to transurethral resection of the prostate (TURP). For aspirin, however, the need to discontinue the drug is somewhat controversial.[4]

The primary objective of this study has been to evaluate the peri-operative morbidity associated with men who were on clopidogrel and continued on this medication at therapeutic levels during PVP treatment. This study is the first study specifically addressing the treatment of men on clopidogrel by PVP whether by the 80W KTP laser or the 120W LBO laser.

A limitation of our study was the absence of preoperative and postoperative PSA measurements to estimate the volume of tissue removed. However, a statistically significant improvement in flow rate, post void residual volume, IPSS score, and
quality of life assessment was demonstrated. Further, this was achieved despite concurrent use of clopidogrel. Clopidogrel is a contraindication for TURP and holmium enucleation of the prostate (HoLEP) due to the increased risk of intra-operative and post-operative hemorrhage. HoLEP has been demonstrated to have superior hemostatic properties than TURP.[7] Yet, some studies have found a transfusion rate as high as 9.6% with HoLEP in anticoagulated patients.[8] The functional improvement demonstrated in our patients at three months is consistent with the literature regarding functional improvement post PVP treatment with the 120W LBO laser.[1] Thus there was no loss of efficacy of PVP treatment despite the concurrent use of clopidogrel.

This study is limited by the small population size as only 14 of the 18 men were reviewed at three months. 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 study. Additionally, drinking a large volume of fluid for the flow study may precipitate congestive cardiac failure in men with significantly compromised cardiac function.

The men in this series had significant medical co-morbidities. This is expected with the requirement for medications such as clopidogrel. The ability to carry out surgery on such men, with very few adverse events, demonstrates the safety of PVP. No patients in our series required blood transfusion. More importantly, there were no deaths, nor cardiovascular events within 90 days of the procedure. The intravascular absorption of irrigation fluid during TURP has been shown to be approximately 700 ml.[9] However, studies have demonstrated no significant intravascular absorption of irrigation fluid with PVP.[10-12] 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.

There are relatively few studies that specifically examine the use of PVP in the setting of continued anticoagulation. The studies which have examined this have either few numbers of men on clopidogrel or present the results of a mixture of men on either clopidogrel, aspirin or coumadin.[13]

As the number of patients requiring anti-platelet or anticoagulant therapy increases, surgeons will have to develop new techniques to allow the patient to continue their medication and have safe and efficacious surgery. PVP is an efficacious treatment for bladder outlet obstruction. Further, the ability to continue therapeutic anticoagulation and anti-platelet agents is a significant advantage over HoLEP and conventional TURP. Larger studies with greater numbers of patients are required prior to PVP becoming the gold standard for high-risk patients with bladder outlet obstruction. Regardless, this is an exciting and promising new technology.

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