นิพนธ์ต้นฉบับ

Urethral Traction after Transurethral Resection of the Prostate: Is it necessary?

Keeratipon Wiengpon M.D., Chareon Leenanupunth M.D., Wisoot Kongchareonsombat M.D., Wit Visedshsindh M.D., Supannee Nilskulwat BSC. Nursing., Kittinut Kijvikai M.D

Abstract

Objective: To compare clinical outcomes between Foley catheter traction and non traction after transurethral resection of the prostate (TURP).

Materials and Methods: Randomized prospective control trial was performed in the patients who required surgical management for benign prostatic hyperplasia. The study compared between Foley traction and non traction after TURP procedure. Data were collected included in patient characteristics, perioperative, postoperative outcome and complication.

Results: Baseline characteristics of both groups were similar. There were no statistically difference between traction group and non traction group regarding operative time ,weight of prostate resection, perioperative blood loss, rate of blood transfusion, hematocrit decreasing of clot retention, and post operative complication. There were statistically significant decreasing in pain score after operation (2.95 $\pm$ 0.82 versus 4.95 $\pm$ 1.3, P <0.05) and shorter length of hospital stay (49.5 $\pm$ 8.8 versus 60.5 $\pm$ 18 hours, P <0.05) in non traction group compared to traction group.

Conclusion: Non Foley catheter traction technique after TURP is a safe procedure and it provides less pain and shorter length of hospital stays compared to the Foley catheter traction technique.

Key Words: Transurethral resection of the prostate, Foley catheter traction, Bleeding

Division of Urology, Department of Surgery, Ramathibodi Hospital, Mahidol University, Bangkok 10400, Thailand

การดึงสายสวนปัสสาวะหลังจากการตัดต่อมลูกหมากผ่านทางการส่องกล้อง มีความจำเป็นหรือไม่

กีรติพล เวียงพล พ.บ., เจริญ ลีนานุพันธ์ พ.บ.,
วิสูตร คงเจริญสมบัติ พ.บ., วิทย์ วิเศษสินธ์ พ.บ.,
สุพรรณี นิลสกุลวัฒน์ พย.บ., กิตติณัฐ กิจวิกัย พ.บ.

บทคัดย่อ

วัตถุประสงค์: เพื่อเปรียบเทียบผลทางคลินิกระหว่างการดึงสายสวนปัสสาวะและไม่ดึงสายสวนปัสสาวะ หลังจากการผ่าตัดต่อมลูกหมากด้วยวิธีการส่องกล้อง

วิธีการศึกษา: เป็นการศึกษาสุ่มเปรียบเทียบในผู้ป่วยต่อมลูกหมากโตที่มีข้อบ่งชี้ในการรักษาโดยวิธีการผ่าตัด โดยเปรียบเทียบระหว่างกลุ่มที่ดึงสายสวนปัสสาวะและไม่ดึงสายสวนปัสสาวะ ระหว่างเดือนพฤษภาคม 2553 ถึงเดือนพฤศจิกายน 2554 โดยจำนวนผู้ป่วยที่เข้าร่วมการศึกษาทั้งหมด 40 คน แบ่งเป็นกลุ่มที่ต้องดึงสายสวนปัสสาวะ 20 คน และกลุ่มที่ไม่ต้องดึงสายสวนปัสสาวะ 20 คน

ผลการศึกษา: ข้อมูลพื้นฐานของผู้ป่วยทั้งสองกลุ่มไม่มีความแตกต่างกัน ระยะเวลาการผ่าตัด ขนาดต่อมลูกหมากที่ผ่าตัด ปริมาณการเสียเลือด จำนวนเลือดที่ได้รับ การลดลงของความเข้มข้นเลือด อัตราการเกิดปัสสาวะไม่ออกจากการอุดตันของลิ่มเลือด และภาวะแทรกซ้อนหลังการผ่าตัด แต่ผู้ป่วยในกลุ่มที่ไม่ได้ดึงสายสวนปัสสาวะ มีคะแนนความเจ็บปวดน้อยกว่า (2.95 ± 0.82 versus 4.95 ± 1.3, $P < 0.05$) และระยะเวลาในการนอนโรงพยาบาล (49.5 ± 8.8 versus 60.5 ± 18 hours, $P < 0.05$) น้อยกว่าในกลุ่มที่ได้รับการดึงสายสวนปัสสาวะ

สรุป: การไม่ดึงสายสวนปัสสาวะหลังจากการผ่าตัดต่อมลูกหมากโดยวิธีการส่องกล้อง เป็นวิธีการที่ปลอดภัย และช่วยลดในเรื่องความปวดหลังการผ่าตัด และระยะเวลาในการนอนโรงพยาบาล

หน่วยศัลยศาสตร์ยูโรวิทยา ภาควิชาศัลยศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี

Introduction

Transurethral resection of the prostate (TURP) is the gold standard for the surgical management of benign prostatic hyperplasia (BPH)[1]. In the past, bleeding after TURP is a major cause of morbidity and occasional mortality especially in old age patients who have low cardiovascular reserved[2]. Traction of Foley catheter after TURP is used by many urologists to control post TURP bleeding[3]. However, several institutes do not prefer this technique due to the patients, complaints, regarding severe pain and discomfort during the catheter traction. In addition, this traction procedure may prolong catheter time and hospital stay. To date, TURP has been performed by using modern instruments and technique in which provide the excellent endoscopic visualization and perfect hemostasis[4-6]. Therefore, the point of bleeding can be completely stopped and the bleeding after TURP is rarely occurred. Currently, there is a limited data regarding the necessity of Foley catheter traction after TURP and there is also no consensus regarding the standard guideline mentioned about this issue. The decision of "traction or no traction" is depended on the surgeon preference and experience in which is vary among the various institutes. In our study, we compare the outcomes of the patients who underwent TURP between traction group and non-traction group.

Materials and Methods

Between May 2009 and November 2010, 40 patients who had indications for TURP were enrolled into the study. This randomized prospective study was approved by ethical committee of the hospital. The patients were divided into 2 groups (group 1; traction and group 2; no traction after TURP) by using blind envelope. TURP was performed by both urological staffs and senior urology residents. The procedure has been performed using bipolar electro-cautery system under endoscopic vision. After completion of the procedure, all cases were indwelled with a no. 24, 3-way Foley catheter. In the group 1; traction, the catheter was traction with balloon 30 ml and the tail of the catheter was fixed in the level of the patient knee for 24 hours (Figure 1). In the group 2; non-traction, the catheter was left with balloon of 10 ml. (Figure 2). The demographic data of both groups, operative outcomes including operative times, blood loss, prostate resected weight, pain score and complication were recorded.

Fig.1 *Foley catheter traction technique*

Fig.2 *Non-Foley catheter traction technique*

All data were analyzed by SPSS program version 11.5. Both groups were compared by independent-Sample T Test. In nonparametric data, Chi-Square test was used. Mann-Whitney Test was used for un-normal distribution data. All tests were considered statistically significant at P-value of less than 0.05.

Results

There were no significant difference in between age, BMI ,ASA status, history of patients who receive 5 alpha reductase drug or history of retained Foley catheter before surgery. The indications for surgery were failure of medical treatment (52%), refractory urinary retention (35%) and urinary tract infection (5%) (Table 1).

Regarding operative time, operative blood loss, weight of prostate resection, post operative hematocrit dropping were similar in both groups. All Histologic finding were benign prostatic hyperplasia. Patient in non traction groups had less pain, and shorter length of hospital stay compared to the traction group (Table 2).

None of the patients required re-operation. However, there was one patient in non traction group needed Foley catheter traction because of bleeding. The median of follow up was 77 days (14-410). There was one case of contracture bladder neck in traction group (Table 3).

Discussion

Intraoperative and postoperative bleeding after TURP are the major concern for most of urologists especially in the earlier of endourology era. The amount of intraoperative bleeding depends on the size of the prostate, the length of time required to resect the adenoma, instruments and the surgeon's skills[1]. The use of preoperative finasteride and dutasteride can reduce bleeding during and after TURP[7-9].

For the postoperative bleeding concern, arterial bleeding is controlled by electrocoagulation. This should be done as one completes each stage of the

Table 1 *Baseline patient characteristics*

	Traction group	Non traction group	P-value
Patients	20	20	
Age (years)	69.25 ± 7.5	71 ± 5.6	0.383
BMI (kg/m^2)	21.9 ± 2.7	21.6 ± 3.3	0.683
Indication for surgery			0.895
Refractory urinary retention	8	6	
Fail medication	10	11	
Renal insufficiency	0	1	
Urinary tract infection	1	1	
Vesical calculi	0	1	
Persistent hematuria	1	0	
Receive 5 alfa reductase drug before surgery			
Yes/No	6/14	7/13	0.736
Retained foley cath before surgery			
Yes/No	7/13	6/14	0.736

Data are presented as the mean ± SD

Table 2 *Perioperative and Postoperative Data*

	Traction group	Non traction group	P-value
Operative time (minutes)	65.5 ± 20	75 ± 28	0.20
Weight of resection prostate(grams)	15 (2-60)	16.5 (4-70)	0.45
Perioperative blood loss (cc)	277.5 ± 125.1	267.5 ± 132.1	0.81
Hematocrit dropping (%)	2.95 ± 2.1	2.6 ± 2.68	0.654
Pain score (VAS)	4.95 ± 1.3	2.95 ± 0.82	<0.05*
Morphine requirement (mg)	4 (0-12)	0 (0-12)	0.63
Blood transfusion (U)	0 (0)	0 (0-1)	0.31*
Catheter time (hours)	60 (30-336)	46 (34-70)	0.64
Length of hospital stays (hours)	60.5 (± 18)	49.5 ± 8.8	0.02*
Follow up (days)	121 (30-400)	77.5 (14-410)	0.238
Histology			0.038*
BPH	17	11	
BPH with prostatitis	3	9	
Prostate cancer	0	0	

Data are presented as the mean ± SD for operative time, perioperative blood loss, Hct dropping, pain score, length of hospital stay
Data are presented as the median (min-max) for weigth of prostate resection, morphine requirement, blood transfusion, catheter time, follow up.

Table 3 *Postoperative complications*

	Traction group	Non traction group	P-value
Re-operation	0	0	
Clot retention	1	0	>0.05
Perforation	2	0	0.487
Retraction catheter due to bleeding	0	1	
Urinary retention	2	1	>0.05
Contracture bladder neck	1	0	>0.05
Urge incontinence	4	2	0.661
Urethral stricture	0	0	
Urinary tract infection	1	0	>0.05

resection, before moving on to the next stage. After the catheter is inserted, at the end of the surgical procedure, the irrigation fluid should be light pink. If the irrigation fluid has a continued red color, one should suspect arterial bleeding. For venous bleeding, it is usually controlled by placing the traction catheter. Venous bleeding can also be controlled by filling the bladder with 100 mL of irrigating fluid and placing the catheter on traction for 7 minutes at the operating table[1]. However, the duration of Foley catheter traction is uncertainly. The traction catheter time was varied from 2 to 24 hours[10,11]. Walker 1995 reported that traction for the first 30 minutes after resection reduced blood loss during this period[3]. They found that the traction does not alter the blood loss during the 90 minutes after traction removed. To date, there was no consensus regarding this issue whether we should perform traction after TURP. However, new technology; Bipolar TUR-P provides excellent hemostasis and the procedure usually performs under endoscopic magnification with the camera system[6]. Therefore, all of the bleeding points including arterial and venous bleeding can be visualized and controlled perfectly. The incidence of the bleeding after TURP is quite rare in the modern endourology era. The question concern whether traction after TURP is necessary?

In the earlier period of our practice, we usually use traction by Foley catheter over night and this is the major cause of the pain and discomfort for patient after TURP. The procedure has been performed for 20 years as our senior staffs suggestion. Most of the patients who underwent traction needed opioid drug for control pain. Moreover, some patients could not tolerate the pain and asked for earlier removal. Our data demonstrated that there was no difference in the clinical outcome such as postoperative drop of hematocrit, re-operation for stop bleeding, amount of blood transfusion in both group. Non-traction group had less pain scores and shorter length of hospital stays than in the traction group with statistically significance. Prostate gland size is not affect the outcome. In this study, we resected the largest of 70 grams of prostate gland with non traction catheter technique. This patient had very good postoperative results and there was no complication. Recently, Leelamanothum et al. reported in their retrospective study that short catheter traction time (7-10 minutes) after the end of procedure is the safe technique[12]. There was no difference in clinical outcomes such as post operative bleeding or amount of blood transfusion compare with traction groups.

There was a limitation of our study. Estimation of blood loss of TURP is quite difficult and subjective. In this study, blood loss was estimated by anesthetist's experience and indirect evidence of blood loss, these were including hematocrit dropping and blood transfusion. In literature, there have many methods for blood loss measurement such as portable photometer for hemoglobin detection (HemoCue photometer)[13] or urine-strip techniquw[14]. However, our study showed no difference in clinical outcomes in hematocrit dropping, amount of blood transfusion.

Conclusions

Non Foley catheter traction technique after TURP is a safe procedure. It can reduce postoperative pain, catheter time and hospital stay compared to catheter traction technique. In uncomplicated cases, the traction after TURP may not necessary in the modern endoscopic era.

Acknowledgments

The authors wish to thank all urological staffs of Ramathibodi hospital.

References

1. Fitzpatrick JM. Minimally Invasive and Endoscopic Management of Benign Prostatic Hyperplasia. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. Campbell's Urology 9th ed. Philadelphia: **WB Saunders**; 2007. p. 2803-44.
2. Melchior J, Valk WL, Foret JD, Mebust WK. Transurethral prostatectomy: computerized analysis of 2,223 consecutive cases. **J Urol** 1974; 112(5): 634-42.
3. Walker EM, Bera S, Faiz M. Does catheter traction reduce post-transurethral resection of the prostate blood loss? **Br J Urol** 1995; 75(5): 614-7.
4. Berger AP, Wirtenberger W, Bektic J, Steiner H, Spranger R, Bartsch G, et al. Safer transurethral resection of the prostate: coagulating intermittent cutting reduces hemostatic complications. **J Urol** 2004; 171(1): 289-91.
5. Yang Y, Hong BF, Fu WJ, Xu Y, Chen YF, Zhang CE. A comparative study on the photoselective vaporization of the prostate and transurethral electrovaporization resection of prostate for the treatment of benign prostatic hyperplasia. **Zhonghua Wai Ke Za Zhi** 2007; 45(14): 951-3.
6. Ho HS, Cheng CW. Bipolar transurethral resection of prostate: a new reference standard? **Curr Opin Urol** 2008; 18(1): 50-5.
7. Donohue JF, Sharma H, Abraham R, Natalwala S, Thomas DR, Foster MC. Transurethral prostate resection and bleeding: a randomized, placebo controlled trial of role of finasteride for decreasing operative blood loss. **J Urol** 2002; 168(5): 2024-6.
8. Donohue JF, Hayne D, Karnik U, Thomas DR, Foster MC. Randomized, placebo-controlled trial showing that finasteride reduces prostatic vascularity rapidly within 2 weeks. **BJU Int** 2005; 96(9): 1319-22.
9. Martov AG, Ergakov DV. The experience in dutasteride use before transurethral prostatic resection for large adenoma. **Urologiia** 2008; 46(4): 8-50, 2.
10. RP S, AE T, SA K. Transurethral urethral resection of the prostate. In: Krane RJ, Siroky MB, Fitzpatrick JM, editors. **Operative urology**: Surgical skills Pensnylvania Churchill Livingstone; 2000. p. 417.
11. Schiff JD TA. Electrosurgery of the prostate: Improvement in TUR-P Treatments and Outcomes. In: Smith AD BG, Bagley D,Clayman RV, Docimo SG, Jordan GH, et al ed, editor. Smith's textbook of Endourology. 2nd ed. London: **BC Decker Inc Hamilton** 2006. p. 645-52.
12. Leelamanothum S CV. Short urethral catheter time after TURP:Doses its effect outcome? **Thai J Urol** 2010; 31(1): 22-6.
13. Ekengren J, Hahn RG. Blood loss during transurethral resection of the prostate as measured by the HemoCue photometer. Scand **J Urol Nephrol** 1993; 27(4): 501-7.
14. Ungjaroenwathana W, Bunyaratavej C, Tosukhowong P, Dissayabutra T. Estimation of blood loss in transurethral resection of prostate (TUR-P) by urine-strip. **J Med Assoc Thai** 2007; 90(11): 2409-15.