

THE EFFECT OF CATHETER TRACTION DIRECTION ON HEMOSTASIS AND PAIN POST TURP

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ABSTRACT

Objective: To compare the effect the direction of catheter traction to the abdomen with direction to the leg on hemostasis and pain degree post-TURP. **Material & Method:** 122 patients with BPH came to Cipto Mangunkusumo Hospital and Budi Asih Hospital, Jakarta during the period between January 2005 to January 2011. **Results:** 101 patients with retention and 21 patients without retention were included in this study. Resected tissue weight was 22,95 grams, irrigation time was 2,24 days, catheterisation time was 3,97 days, and post TURP hospitalization was 3,9 days. Hb decline was 1,17g/dl. There was no statistical difference on Hb decline between leg direction 1,23 g/dl and abdominal direction 1,12 g/dl. Resected tissue weight in abdominal direction group was 25 grams, while in leg direction group was 21 grams. Irrigation time in abdominal direction group was 2 days while in leg direction group was 2,4 days. Catheterisation time in abdominal direction group was 3,3 days while in leg direction was 3,4 days. Post TURP hospitalization in abdominal direction group was 3,7 days while in leg direction groups was 4,2 days. In this study resected tissue weight, irrigation time, catheterisation time, and hospitalization time. There were 64 patients with pain degree registration, patients with abdominal traction had mean pain degree scale 1,52 and 33 patients with leg traction had pain degree scale 2,97, in this study this differences were significant. **Conclusion:** Abdominal traction post TURP was statistically difference on shortened postoperative irrigation and catheterisation time, including reduced post TURP hospitalization and pain degree. Abdominal traction was recommended from this study to be used as the reference standard for changing leg traction.

Keywords: Catheter traction, visual analog scale, hemostasis, transurethral resection of the prostate.

ABSTRAK

Tujuan Penelitian: Penelitian ini membandingkan pengaruh arah traksi kateter ke abdomen dengan ke tungkai pada pasien pasca-TURP. **Bahan & Cara:** Diteliti 122 pasien hiperplasi prostat di RSCM dan RSUD Budi Asih periode Januari 2005 sampai Januari 2011. **Hasil Penelitian:** Sebanyak 101 pasien datang dengan retensi dan 21 pasien tanpa retensi, berat jaringan prostat yang direseksi 24,52 gram, lama irigasi 2,1 hari, lama kateter dipertahankan 3,31 hari, lama rawat 3,69 hari. Penurunan Hb pasca-TURP 1,17g/dl. Secara statistik tidak didapatkan perbedaan bermakna pada penurunan Hb untuk traksi ke arah tungkai 1,23 g/dl dan abdomen 1,12 g/dl. Berat jaringan yang direseksi pasca-TURP (ke arah tungkai 21 gram; ke arah abdomen 25 gram), lama irigasi (ke arah tungkai 2,4 hari; ke arah abdomen 2 hari), lama kateter dipertahankan (ke arah tungkai 3,4 hari; ke arah abdomen 3,3 hari), dan lama rawat (ke arah tungkai 4,2 hari; ke arah abdomen 3,7 hari), dilakukan uji statistik didapatkan perbedaan bermakna secara signifikan. Sebanyak 64 pasien dengan arah traksi ke tungkai memiliki derajat nyeri 2,97 dan arah traksi ke abdomen derajat nyeri 1,52, hubungan ini dengan uji statistik diperoleh perbedaan yang bermakna. **Simpulan:** Traksi kateter ke arah abdomen pasca-TURP pada pasien BPH secara statistik berbeda bermakna untuk mempersingkat waktu lamanya irigasi dan lama kateter dipertahankan, serta mengurangi lama perawatan pasca operasi dan derajat nyeri. Metode traksi kateter ke arah abdomen dapat dijadikan pertimbangan menggantikan metode standar yang biasa digunakan, yaitu kearah tungkai.

Kata kunci: Arah traksi, visual analog score, hemostasis, transurethral resection of the prostate.

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INTRODUCTION

Benign prostate hyperplasia (BPH) in histopathology terms is the increasing number of epithelial and stromal cells of prostate, which eventually will lead to volume enlargement of prostate that can cause benign prostatic obstruction (BPO).¹ The prevalence of BPH begins at the age of 40 and increases with age.² BPH is the second most common disease in urology clinic throughout Indonesia. The incidence of BPH in men aged 51-60 years is around 50%. According to Pinock et al the prevalence of BPH is 20% in male aged 40-49 years and 40% in male aged 65 years, in which about half of them give complaints.³⁻⁵

Until today transurethral resection of prostate (TURP) still remains the gold standard of invasive treatment for BPH. Absolute indications for TURP are recurrent retention due to obstruction caused by BPO, recurrent urinary tract infections due to BPO, macroscopic hematuria due to BPH, bladder stones due to BPO, kidney failure caused by BPO and certain size of bladder diverticulum due to BPO.⁶⁻⁹

Postoperative bleeding is a complication that often occurs in people who underwent TURP. Mebust et al and several other studies reported 2,5% - 34% of patients who underwent TURP required intra-operative or post-operative blood transfusion. If there is post-TURP bleeding, urologists often perform catheter traction, so that the catheter balloon is drawn toward the bladder neck and prevent prostatic bleeding from entering the bladder.¹⁰⁻¹³

Postoperative bleeding directly affects post-TURP catheterization time. In general, traction force is maintained by fixating catheter to the thigh. However when the influence of anesthesia fades, people begin to move their legs, which changes the traction force, thus affecting the process of hemostasis and patients also feels uncomfortable from pain. Relative to the above, catheter traction toward the abdomen can be considered with benefits such as patient more comfortable because it is free to move the leg and traction force is maintained because it is not affected by the movement of limbs.^{5,13,14}

This research is a follow-up study that aims to assess hemostasis and degree of pain caused by the effect of post-TURP catheter traction direction into abdomen compared with catheter traction toward limb.^{13,14} The results of this study is expected to help select the best direction of catheter traction used to

overcome bleeding and provide comfort for post-TURP patients.

OBJECTIVE

To compare direction of catheter traction to the abdomen with direction to the leg on hemostasis and pain degree post transurethral resection of the prostate (TURP).

MATERIAL & METHOD

Sample was taken by consecutive sampling at the Urology Department Cipto Mangunkusumo Hospital (RSCM) and Budi Asih Hospital (Jakarta), from the period of January 2005 to January 2011. Patients were divided into two groups, patients with catheter traction towards abdomen and towards leg.

Criteria for inclusion patients indicated for TURP with prostate volume between 20-60 grams, underwent operation performed by senior resident (last year), and on postoperative care had 24 Fr three-way Foley catheter traction directed towards the abdomen or leg. Selected traction time was between 18-24 hours depending on patient follow-up time, therefore we are unable to use only one benchmark of time. The traction time used does not contradict previous research by Oesterling et al (1992).¹³ In this follow-up study, we assessed the degree of post-TURP pain using visual analog scale (VAS) as a parameter of patient comfort.¹⁴

The exclusion criteria were patients indicated for TURP but have abnormalities such as uncontrolled hypertension, receiving anticoagulation therapy within the last week, and/or have a history of bleeding disorders (complete peripheral blood, bleeding time and abnormal clotting time as parameters).

The sampling mode were, first providing medical information to patients before undergoing TURP procedure, then performing TURP according to procedure, followed by three way 24 Fr Foley catheter insertion postoperatively. The catheter balloon was filled with 40cc of sterile water and irrigated using normal saline at 500 ml/hour. Catheter traction was conducted for 5-7 minutes until the liquid that comes out became clear or faint red, traction force is maintained then fixed according to the group. Traction was maintained up to 18-24 hours post-TURP in the hope that venous bleeding had been stopped by the balloon catheter tampon. Post-TURP hemostasis were assessed by the

occurrence of hematuria and Hb decline recorded by comparing Hb preoperative with Hb 1 hour postoperative. Traction was removed when urine from the catheter had cleared, followed by reducing the irrigation to 60 drops per minute. On the following day if urine from catheter remains clear then irrigation was stopped, while if still red irrigation is maintained. The time for each procedure when the catheter was removed until the length of stay were recorded. Patient's comfort was assessed with VAS scale, scored 1-10 from no pain to very bad pain, taken just before the traction is removed. Mann-Whitney statistical tests performed using SPSS 17.0 to compare the duration of hematuria occurrence, hemoglobin decline, duration of which catheter was maintained, duration of hospitalization, and the degree of postoperative pain between the group with abdominal traction and the group with limb traction.

RESULTS

A total of 122 patients met the inclusion criteria with age ranging from 50-82 years with a mean of $65,62 \pm 7,28$ years. A hundred and one patients came with retention and 21 patients without retention. Operations carried out in spinal anesthesia. Preoperative prostate weight has a range of 20 - 60 grams with a mean of 42,62 grams. The

weight of resected prostate tissue 22,95 grams (range 5-55) and duration of irrigation 2,24 days (range 1-6), duration of catheter retained 3,97 days (range 2-7) and duration of post-TURP hospitalization 3,97 days (range 2-12). Hb decline was 1,17 g/dl (range 0,10 to 5,20).

Of all patients included in this study, none had heavy bleeding due to sinus injury intra-operatively, none had retention due to blood clots post-TURP nor had Hb decline that requires transfusion. Based on the direction of postoperative traction, postoperative Hb decline for abdominal traction was 1,12 g/dl and 1,23 g/dl for limb traction. Duration of post-TURP irrigation was about 1-6 days, 2 days for abdominal traction and 2,38 days for limb traction. Duration of catheterization was 3,31 days for abdominal traction and 3,58 days for limb traction. Duration of stay post TURP was 3,69 days for abdominal traction and 4,24 days for limb traction (Table 2).

Degree of pain according to VAS was measured on follow-up study in the period of January 2009 until January 2011. 64 patients fit the inclusion criteria. The mean degree of pain scale of post-TURP patients was a score of 2,22 (range 1-5). Catheter traction catheter into the abdomen is more convenient for patients, significant by statistical tests (Table 3).

Table 1. Patient's characteristic.

	Abdomen (n = 61)	Limb (n = 61)	Total (n = 122)
Age (year)	64,67	66,52	65,62
Prostate volume (gram)	43,69	41,54	42,62
Resected prostate weight (gram)	24,52	21,37	22,95

Table 2. Comparison of abdominal traction and limb traction.

	Abdominal (n = 61)	Limb (n = 61)	p
Hb decline (g/dl)	1,12	1,23	0,410
Duration of irrigation (days)	2,10	2,38	0,013
Duration of catheterization, maintained (days)	3,31	3,58	0,039
Duration of post-TURP hospitalization (days)	3,69	4,24	0,017

Table 3. Degree of pain comparison for abdominal traction and limb traction.

	Abdominal (n = 33)	Limb (n = 31)	p
Degree of pain according to VAS	1,52 Range (1-3)	2,97 Range (1-5)	< 0,0001

DISCUSSION

Over the last decade TURP is still the gold standard for prostate resection. The largest intra-operative complications is bleeding requiring blood transfusion.^{13,15} Mebust et al and several other researchers reported that the incidence of blood transfusion post-TURP varies between 2,5 - 34%.^{13,16,17} A study on 378 patients by Perkins and Miller found that the average bleeding was 12,9 ml per gram of prostate resected (range 7,2 to 22,2 ml/g). The amount of blood loss depends on several factors: the size of prostate, surgery duration, and operator skill.¹² In a retrospective study by Borboroglu PG et al, of 520 patients who underwent TURP with a mean 18,8 grams of tissue resected, 0,4% requires blood transfusion, and an average of 3,2 days of catheterization.¹⁸ Reich et al reported an evaluation conducted on 9197 TURP patients with a mean of 28,4 grams of tissue resection, they found 2,9% patients requires blood transfusions.¹⁹ In our study, patients underwent TURP have mean of 24,52 grams tissue resected with a mean Hb decline 1,12 g/dl, none had blood clot retention nor Hb decline requiring transfusion, the reason is that in our study TURP performed was limited for prostate volume of 20-60 grams.

Urologist often performs post-TURP catheter traction to reduce the effects of venous bleeding. Most often procedure performed was catheter traction with limb fixation. In traction towards limb, the traction force couldn't be controlled and changes due to movement of limb.¹³ In our study, traction force (either towards the abdomen or limb) were assessed qualitatively by observing the fluid production coming from the catheter prior to fixation. Thus the effect of traction force's stability are expected to influence the process of post-TURP hemostasis.

Oesterling (1992) used a tool similar to corset (abdominal catheter holder), which is equipped with velco strip that can hold the catheter traction as plaster would, basically catheter traction towards abdomen and fixed on the corset. Apparently in this study of post-TURP bleeding is minimal, as many as 76 patients aged 58-84 years (mean 66 years) performed TURP with a mean tissue resection 24 grams, the average duration of 58 minutes. Results showed 91% of patients do not require postoperative irrigation, 74% (56 patients) had catheter removed on the second day after operation, 26% (20 patients) had it removed on the

third day. Patients were discharged on the same day after catheter removal.¹³

In our study, patients who had traction toward abdomen didn't have hematuria during traction or after traction removal, therefore irrigation was maintained for 2 days only and the catheter was maintained for 3 days. Statistically there were significant differences on the duration of irrigation, duration of catheterization and duration of postoperative stay between groups of abdominal traction and limb traction. However, although there is also a difference in Hb decline but it wasn't statistically significant. Our follow-up study have results in accordance with preliminary studies by Fadlol et al.

Compared with the study by Oesterling, the traction toward the abdomen in this study still uses post-TURP catheter irrigation although during traction and after traction removal there was no hematuria. It affects the duration of catheterization and ultimately affect the duration of post-TURP hospitalization.

The decision to either provide post-TURP catheter irrigation or not, as seen in previous studies, will affect the duration of catheterization and ultimately affect the duration of post-TURP hospitalization.^{5,13,18}

The weakness of this research is there was no randomization. Sampling in this way can affect the operator in performing intraoperative coagulation which in the future may affect postoperative hemostasis.^{11,13}

Ready et al stated that the type of surgery, duration of operation, extensive of tissue operated, and operator's skill are all associated with the degree of postoperative pain. In our follow-up study, using VAS to measure the degree of pain felt by post-TURP patients, the abdominal traction is significantly more comfortable and have lower degree of pain than the limb traction.¹⁴

CONCLUSION

Post-TURP catheter traction towards abdomen on patients with BPH, statistically significant have better hemostasis and lower degree of pain is than the catheter traction towards the limb. Hemostasis with catheter traction towards abdomen is significantly better concluded from the shorter duration of catheter irrigation and postoperative catheterization, as well as the shorter duration of postoperative hospitalization. The method of

catheter traction toward the abdomen (traction to the limb) can be considered to replace the standard methods commonly used.

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