

Short-term versus long-term catheterization after vaginal prolapse surgery

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ABSTRACT

Utero-vaginal prolapse is one of the commonest cause for vaginal operations in our country. The expense of this operation can be reduced by reducing duration of catheterization and thereby reducing hospital stay. A prospective, comparative hospital based study was used to assess whether removal of an in-dwelling catheter after 24 hours of vaginal operations with anterior colporrhaphy affects the rate of recatheterization, asymptomatic urinary tract infections, and hospital stay in comparison to 72 hours catheterization. We assigned 100 women who underwent vaginal operations. In-dwelling catheter was removed after 24 hours in group A and after 72 hours in group B. The association between Post-operative urinary retention, pus cells count > 5 per High Power Field, bacterial culture positivity and the length of catheterization were assessed by Chi square test. Recatheterization occurred in three patients (6%) of group A and none in group B (P value 0.241). Mean hospital stay after operation was 3.42 days in group A and 4.48 days in group B. Asymptomatic urinary tract infections (pus cells > 5 per High Power Field) occurred in nine (18%) in group A and fifteen (30%) in group B (P value 0.16). Bacterial culture positivity occurred in seven (14%) in group A and twenty-two (44%) in group B (P value 0.001). Despite increased recatheterization rate, early removal of in-dwelling catheters after uncomplicated vaginal hysterectomy pelvic floor repair and anterior colporrhaphy decreased mean catheterization time, mean hospital stay and asymptomatic urinary tract infection.

Keywords: Asymptomatic urinary tract infection, post-operative urinary retention, urine culture

INTRODUCTION

Bladder drainage by a transurethral Foley catheter is common practice following vaginal hysterectomy for preventing increased risk of post-operative urinary retention (PUR). Short duration of catheterization causes increased rate of PUR.¹⁻⁵ Duration of use of Foley catheter is generally based on custom rather than evidence-based knowledge and therefore varies considerably. Routine catheterization upto three days after vaginal hysterectomy is commonly used. Continuing in-dwelling catheter after 24 hours has limited benefit in uncomplicated routine vaginal hysterectomy.⁶ Furthermore, in-dwelling catheters have been associated with increased bacterial counts and higher rates of positive urine cultures which concludes urinary tract infection (UTI) is more common in long term catheterization.^{1-3,7-9} Short duration catheterization reduces the hospital stay,^{2-5,10} and this reduces expense of operation. It also helps in early mobilization after operation. This makes healing procedure faster. The purpose of this study is to determine prevalence of asymptomatic UTI (pus cells count > 5 per High Power Field and positive bacterial culture in urine) and PUR in short and long term catheterization following vaginal operations (vaginal hysterectomy and anterior colporrhaphy).

MATERIALS AND METHODS

This study is a prospective comparative hospital based study that was conducted between 2012 January to 2013 January, in Department of Obstetrics and Gynecology, Nepal Medical College Teaching Hospital, Kathmandu.

Protocol was approved by Ethical Committee of hospital and informed consent was obtained from each woman. All women who underwent vaginal hysterectomy, anterior colporrhaphy and Manchester operations without any given exclusion criterias (history of previous urine retention, pre-operative urinary infection, bladder injury and other associated complication during operation) were included in this study. After taking complete history and examinations, after vaginal operations, patients were included in the study. They were randomized into group A, which include the patients, whom Foley catheterization was kept for 24 hours and group B, which include the patients, whom Foley catheterization was kept for 72 hours. After removal of catheter urine output was recorded every 2 hourly for 24 hours. If the patient could not pass urine, duty doctors were informed immediately and recatheterization was done. Urine for routine, microscopic examination and culture were sent on the third day of operation. Reports were collected accordingly. Data was calculated by Chi square test.

All vaginal hysterectomies (VH) were performed for uterine descent of different degrees and pelvic floor repairs (PFR) are done for the patients with cystocele and rectocele. Spinal anaesthesia is given to all patients, methods of vaginal hysterectomies are not much different among faculty members. Intravenous drips are kept for 18 to 24 hours after operations. Liquid diet was started usually next day of operation and followed by soft diet and normal diet. Antibiotics are given for seven days.

Inclusion criterias: All the patient with vaginal hysterectomy and anterior colporrhaphy without any exclusion criterias.

Exclusion criterias :

1. Those with history of previous retention of urine
2. Pre-operative urinary infections, with pus cells > 5 per High Power Field in routine examination of urine and bacterial culture positive
3. Bladder injury during operation
4. With other associated complication during operation eg, haematoma, excessive haemorrhage etc.

The following variables were assessed for each group: rate of recatheterization, asymptomatic urinary tract infections (bacterial pus cells count > 5 per High Power Field, culture positive) and length of hospital stay.

The length of hospital stay was calculated as the time interval between the completion of surgery and hospital discharge. Before discharge, patients should be able to take normal diet, dress themselves, be fully mobile around the ward, stool had to be passed, and be satisfied that they could manage at home without analgesics.

RESULTS

A total number of 100 cases were enrolled in the study and 50 were assigned to each group. All women had similar indication for vaginal operations, duration of surgery, pre-operative and post-operative care. The mean age was 53.55 (SD±10.97) (Table-1). Seventy nine patients underwent Vaginal Hysterectomy with Pelvic Floor Repair, 19 anterior colporrhaphy and 2 Manchester operation. The most common group who had Vaginal Hysterectomy with Pelvic Floor Repair were between 50-59 and 60-69 years (32% in each group), least common was seventy and over (5%) (Fig. 1). Among fifty patients of group A three (6%) had retention of urine and needed recatheterization (two after Vaginal Hysterectomy with Pelvic Floor Repair and one after Pelvic Floor Repair) but none of the group B had retention (Table-2). Mean catheterization time was 1.1 days in group A and 3 days in group B (Table-2). Two patients among the group A needed recatheterization for two more days and one of this group needed recatheterization four more days. Mean hospital stay after operation was 3.42 days in group A and

4.48 days in group B (Table-2). Among fifty of group A thirty one patients could be discharged after third day of operation, sixteen of them needed to stay for four days as stool was not passed within third day, among three retention cases two of them needed to stay for four days and one for six days. Among group B twenty six could be discharged after fourth day of operation and twenty four after fifth day. Among group A nine out of fifty had pus cells > 5 per High Power Field (18%), but fifteen out of fifty (30%) in the group B (Table-3). Bacterial culture positive were found 7 out of 50 (14%) in group A and 22 out of 50 (44%) in group B (Table-4). The most common bacteria isolated was E-coli, 16 out of 29 among culture positive group (55 %) (Fig. 2).

Table-1: Distribution of mean age among the study population (n=100)

Mean Age of study groups	Standard Deviation
53.35	±10.94

Table-2: Recatheterization rate, mean catheterization time and mean hospital stay in both groups of patients (n=100)

	Catheterization Group		P value
	Short term (n=50)	Long term (n=50)	
Recatheterization	3 (6%)	0 (0%)	0.241 (Chi squared test)
Mean catheterization time	1.1 days	3 days	
Mean hospital stay	3.42 days	4.48 days	

Table-3: Asymptomatic urinary tract infection in both groups of patients (n=100)

Urinary tract infection	Catheterization Group		P value
	Short term (n=50)	Long term (n=50)	
Pus cells in urine > 5 per HPF	9 (18%)	15 (30%)	0.16 (Chi squared test)
Pus cells in urine < 5 per HPF	41 (82%)	35 (70%)	
Total	50	50	

Table-4: Asymptomatic urinary tract infection in both groups of patients (n=100)

Urinary tract infection	Catheterization Group		P value
	Short term (n=50)	Long term (n=50)	
Bacteria culture positive	7 (14%)	22 (44%)	0.001 (Chi squared test)
Absent	43 (86%)	28 (56%)	
Total	50	50	

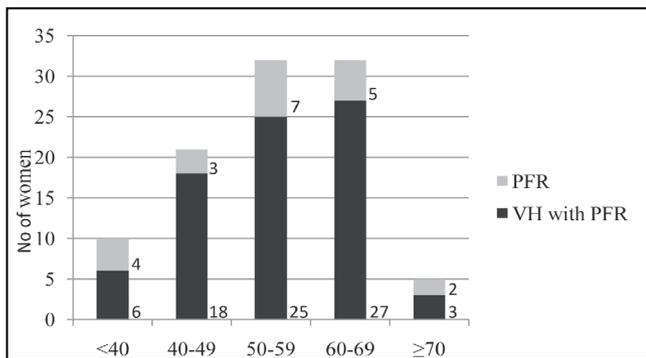


Fig. 1. Age distribution of VH with PFR and PFR (anterior colporrhaphy)

DISCUSSION

In-dwelling urinary catheterization is commonly used to assess urinary output to prevent post-operative urinary retention. Urinary catheterization is not a harmless procedure. Urinary tract infections acquired in hospital are associated with urinary catheters. Such infections not only prolong hospital stay and are expensive to treat but also cause unpleasant symptoms.

In our study, recatheterization was needed in three patient (6%) of group A, (in early catheter removal group after 24 hours of surgery) in comparison to group B (72 hours of catheter removal), whom recatheterization were not needed. The findings are similar to the studies, Liang *et al*, (34% versus 12%) no-catheter-use in contrast to long term catheter use group.¹ Choudhury *et al*, (10% versus 3%)² and Hakvoort *et al*, (40% versus 9%)³ short term versus long term catheter group. Ghezzi *et al*, in his study, immediate Foley removal after laparoscopic and vaginal hysterectomy 21% developed post-operative voiding dysfunction, of which 13.7% had complete urinary retention. Patients undergoing vaginal hysterectomy are more likely to develop post-operative voiding dysfunction than those who undergo laparoscopic hysterectomy.¹¹ This may be due to anterior colporrhaphy and bladder mobilization in vaginal hysterectomy. Kamilya *et al*, in his study also found a significantly higher number of retention of urine or residual urine more than 150 ml in the early removal group.⁴ Duerr, had similar findings, that clamping the catheter 1 day after surgery as opposed to 3 days later resulted in a lower number of successful voiding trials (79.3% vs 90.9%).⁵ Hjalmar *et al*, in his study post-operative voiding problems occurred infrequently with 1-day catheterization, and no more frequently than with catheterization for three days.⁷ Alessandri *et al*, in his study proved there could be an association between necessity of recatheterization and the type of surgery (vaginal hysterectomy) or the type of anesthesia (spinal).¹⁰ Dobbs *et al*, prospective blindly randomized trial comparing continuous bladder drainage with catheterization at abdominal hysterectomy, showed that in-out urinary catheterization at the time of routine abdominal hysterectomy was associated

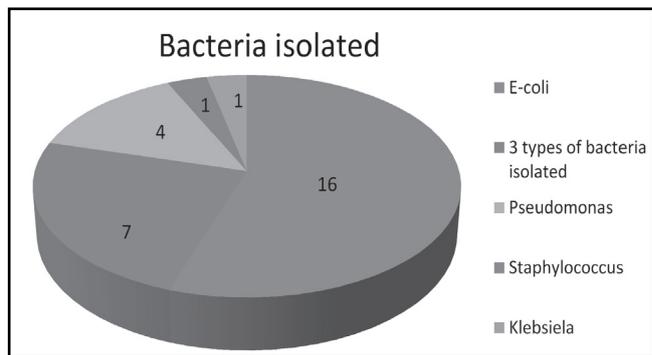


Fig. 2. Bacteria isolated in culture positive urine

Fig. 2. Bacteria isolated in culture positive urine

with a significantly higher incidence of post-operative urinary retention compared with in-dwelling catheterization.¹²

All these researches prove that short term catheterization requires recatheterization more than long term catheterization even though they are in minimum percentage.

Thapa *et al*, had similar study, but she had contrast result, short time catheterization following vaginal surgery had less incidences of urinary retention than long term catheterization (0% versus 2%).⁸ Dunn *et al*, also had similar result, the early removal of in-dwelling catheters after operation was not associated with need for recatheterization.¹³ These two results in contrast to all above, may be due to limited size of study. Result may be different if size is enlarged.

Pant PR showed that inspite of different age, different degree of prolapses, different degree of cystocele and different duration of prolapse out of 257 patients catheterized for 12 to 24 hours, only 5 patients had retention of urine (3.3%). He concluded long duration post-operative catheterization 48 to 72 hours is not necessary in patients after uncomplicated vaginal hysterectomy and pelvic floor repair.⁶ Similarly in the study of Summitt *et al*, in prospective comparison study of indwelling bladder catheter drainage versus no catheter after vaginal hysterectomy two patients in the catheterized group required recatheterization after the catheters were removed. None of the subjects in the no-catheter group required a catheter, in-dwelling catheterization appears unnecessary after routine vaginal hysterectomy.¹⁴

Though three of the short term group required recatheterization in this study still mean catheterization time is less than long term group (1.16 versus 3 days). This is similar to the study like Hakvoort *et al*, (2.3 versus 5.3 days)³ and Kamilya *et al*, (1.64 versus 4.09 days)⁴. Mean hospital stay is also reduced in short term catheterization in comparison to long term group in this study (3.42 versus 4.48 days). This is also similar to study of Choudhury *et al*, (4.68 versus 6.98 days),² Hakvoort *et al*, (5.7 versus 7 days),³ Kamilya *et al*, (1.64 vs 4.09)⁴ and

Duerr, (2.94 versus 3.46 days).⁵ Alessandri *et al*, in spite of recatheterization, early removal of in-dwelling catheters immediately after uncomplicated hysterectomy seems to decrease first ambulation time and hospital stay.¹⁰ All these results of above researches conclude that short duration catheterization reduces mean catheterization time and thereby reduce hospital stay. Hospital stay can be reduced to 1 to 2 days more by discharging patients after removal of catheter if they are able to come to the hospital immediately if any complications (eg: urinary retention, cannot pass stool, bleeding per vagina).

Asymptomatic urinary infection in our study was more common in long term catheterization group than short term as in most of the past researches. This shows long term catheterization could be one of the cause of urinary infection after vaginal hysterectomy and pelvic floor repair. Similar to this study, Liang *et al*, found urinary infection (18% versus 4%) in the long term catheter use group versus short term catheter use.¹ Similarly Choudhury *et al*, found positive urine culture (16% versus 6%),² Thapa *et al*, (11.1% versus 6.2%),⁸ Hjalmar *et al*, (80% versus 40%)⁷ and Hakvoort *et al*, (40% versus 4%)³ in long term versus short term catheterization group. Pant PR showed that catheterized for 12 to 24 hours, only 8 patients had urinary symptoms out of which 3 patients had frequency and burning micturition.⁶ Glavind *et al*, found higher post-operative bacterial count in patients in long term catheterization group than short term.⁹ Thakur *et al*, in her study has shown that short term catheterization is more beneficial in terms of lower incidence of urinary tract infection and related febrile morbidity as compared to long term catheterization (2 versus 11 in each 50 patients group).¹⁵

These all studies conclude that long term catheterization increases the bacterial infections. In contrast, study done by Dunn *et al*, found no difference in early removal of an in-dwelling catheter versus long term catheterization.¹³ This is the only study which results that long term catheterization is similar to short term catheterization in term of urinary infection, so it may not be significant.

Hannah WJ isolated 80% of UTI after vaginal operations were E-coli¹⁶ which is also similar to this study in which maximum bacteria isolated was E-coli (55%).

Despite, early removal of catheter after vaginal hysterectomy and anterior colporrhaphy needs recatheterization in few patients, there may be much more chances of urinary infections in long term catheterization group. Early ambulation in short term catheter group reduces mean hospital stay. This type of result is found in most of the researches, which concludes short term catheterization should be practiced for cost effectiveness and to reduced complications.

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