Preoperative Vaginal Preparations for Abdominal Hysterectomy for the Prevention of Febrile Morbidity: Savlon Douching vs Povidone-iodine Painting

Kullathida Sowapat MD*,
Sukree Soontrapa MD*, Chuanchom Sakondhavat MD*

** Department of Obstetrics and Gynecology, Faculty of Medicine, Khon Kaen University, Khon Kaen*

Objective: *To compare the effectiveness between savlon solution was douching and povidone-iodine solution painting for reducing febrile morbidity after total abdominal hysterectomy.*
Study design: *Clinical trial.*
Material and Method: *One hundred and fifty patients at Srinagarind Hospital were scheduled for total abdominal hysterectomy (TAH). All subjects were non-randomly allocated to receive either savlon (1:1000 solutions) douching or povidone-iodine (1% solution) painting as pre-operative vaginal preparations. They also received Cefazolin 1 gm. intravenously before the operation. The principal outcome of the study was febrile morbidity.*
Results: *The overall rate of febrile morbidity was 21 percent. The incidence of febrile morbidity in the savlon* vs. *povidone-iodine groups was 16 (12/75) and 25 (19/75) percent, respectively. No statistically significant difference was found between the two groups (p-value = 0.16). The odds ratio was 1.78 (95%CI 0.79 to 3.99) and adjusted odds ratio was 2.09(95%CI 0.86 to 5.10)*
Conclusion: *The effectiveness between savlon solution douching and povidone-iodine solution painting in conjunction with a prophylactic antibiotic before TAH for reducing febrile morbidity was not significant different.*

Keywords: *Vaginal preparation, Total abdominal hysterectomy, Febrile morbidity*

J Med Assoc Thai 2006; 89 (1): 20-4
Full text. e-Journal: *http://www.medassocthai.org/journal*

Total abdominal hysterectomy (TAH) is the most common operative procedure for the treatment of gynecological benign disease at Srinagarind Hospital[1]. The most common postoperative complication is infection[2]. Bacterial contamination from the vaginal vault is a major cause of febrile morbidity and infectious complications such as vaginal cuff cellulitis and pelvic abscess after TAH[3]. Potential risk factors for febrile and infectious morbidities are advancing age, obesity, diabetes mellitus, anemia, prolonged surgery and non-use of a prophylactic antibiotic[1,5].

A prophylactic antibiotic for TAH would decrease most of these infections[6]. Infection of the wound by the abdominal skin flora could largely be prevented by the use of antiseptics[7], while antiseptics for the vagina are much less effective[8,9].

Buppasiri et al conducted a randomized, controlled trial among 300 patients undergoing elective TAH. The patients were randomly allocated to either pre-operative vaginal douching (with1% povidone-io-dine) or nothing at all. Patients in the pre-operative vaginal douching group had a significantly lower rate of infectious morbidity (adjusted odds ratio 0.4, 95%CI 0.2, 0.9); however, there was no statistically significant effect on febrile morbidity (adjusted odds ratio 0.6, 95%CI 0.3, 1.0)[5].

At Srinagarind Hospital, the two most common antiseptic solutions for vaginal preparation are savlon douching and povidone-iodine painting. There is no report evaluating the effectiveness of these two

Correspondence to : Sowapat K, Department of Obstetrics and Gynecology, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand.

vaginal preparations for reducing febrile and infectious morbidities after TAH.

Material and Method

This clinical trial was conducted among 150 patients undergoing elective TAH between September 2004 and June 2005 at Srinagarind Hospital. The patients were non-randomly allocated to either preoperative vaginal douching with savlon (1:1000 solutions) or povidone-iodine (1% solution) vaginal painting. The study protocol was approved by the faculty's Ethics Committee, informed consent was provided to all subjects. The inclusion criteria was women undergoing TAH for benign gynecologic conditions; while exclusions were women undergoing TAH in conjunction with immuno-compromised hosts, malignancy, pregnancy, emergency TAH, obvious gynecologic infection, allergy to savlon or povidone-iodine solution and those who had complications during TAH.

All of the patients received Cefazolin 1 gm intravenously before operation. The savlon group underwent vaginal douching before bedtime the day before surgery and again in the morning prior to surgery; the povidone-iodine group underwent vaginal painting with 1 percent povidone-iodine solution just before the surgery began.

The principal outcome of the study was febrile morbidity, defined as an oral temperature $\geq$38 C (100.4 F) recorded on two occasions, at least 6 hours apart, excluding the first 24 hours after surgery[15]. Temperature was measured with a mercury thermometer every 4 hours for the first 48 hours, then every 6-8 hours; unless fever was present then it was measured more frequently for a longer period.

The baseline characteristics, surgical risk factors, operative procedure, and clinical manifestation were obtained from the medical records. Febrile morbidity was also assessed from medical records. When data collection was completed, data analysis was undertaken using the Student's t test. The effectiveness of preoperative vaginal preparations was evaluated by comparing the incidence of febrile morbidity between the two groups: the x^2-test, odds ratio, adjusted odds ratio and their 95%CI were calculated. A p-value of less than 0.05 was considered statistically significant difference.

Results

The samples of the trial group consisted of 150 patients, 75 were allocated as the savlon (1:1000 solutions) group and another 75 as the povidone-iodine (1% solution) groups. The baseline characteristics of the patients in both groups were comparable (Table 1).

The most common indication for TAH was myoma uteri, followed by cervical intraepithelial neo-

Table1. Baseline characteristics of sample population

Characteristics	Savlon (n = 75)	Povidone-iodine (n = 75)	p-value
Age (yr, mean ± SD)	45.65±6.34	44.11 ± 6.65	0.15
BMI (mean ± SD)	25.13±3.18	24.38 ± 3.86	0.19
Menstruation – No., %			
- menstrual bleeding	5 (6.7)	10 (13.3)	
- no menstrual bleeding	64 (85.3)	61 (81.3)	0.34
- menopause	6 (8.0)	4 (5.3)	
Preoperative days before surgery (mean ± SD)	2.37±1.94	2.21±1.09	0.53
Postoperative days after surgery (mean ± SD)	4.07±0.76	4.12±0.93	0.72
Prophylactic antibiotics – No.,%	75 (100)	75 (100)	1.00
Surgeon – No,%			
- medical staff	39 (52.0)	34 (45.3)	0.51
- resident	36 (48.0)	41 (54.7)	
Operative time (minutes, mean ± SD)	102.91±27.25	106.60±25.80	0.39
Estimated blood loss (ml, mean ± SD)	292.80±164.69	288.93±180.83	0.89
Vaginal cuff suture – No.,%			
-Closed technique	16 (21.3)	16 (21.3)	1.00
-Opened technique	59 (78.7)	59 (78.7)	
Skin incision – No.,%			
-Pfannensteil incision	48 (64.0)	53 (70.7)	0.49
-Low midline incision	27 (36.0)	22 (29.3)	

plasm and endometriosis/adenomyosis. The indications for TAH are shown in Table 2. All indications were not statistically significant difference in both groups (p-value > 0.05).

The overall rate of febrile morbidity was 20.67 percent. The incidence of febrile morbidity in the savlon and povidone-iodine groups is presented in Table 3. No statistically significant difference was found between the two groups (p-value = 0.16, odds ratio was 1.78, 95%CI 0.79 to 3.99) and adjusted odds ratio was 2.09, 95%CI 0.86 to 5.10). The other risk factors for febrile morbidity are shown in Table 4.

Table2. Indications for total abdominal hysterectomy

Indications	Savlon (%) n = 75	Povidone-iodine (%) n = 75
1. Leiomyoma	54 (72.0)	50 (66.7)
2. Cervical intraepithelial neoplasm	6 (8.0)	13 (17.3)
3. Endometriosis and Adenomyosis	9 (12.0)	7 (9.3)
4. Ovarian cyst	4 (5.3)	2 (2.7)
5. Endometrial hyperplasia	0 (0)	2 (2.7)
6. Abnormal uterine bleeding	1 (1.3)	0 (0)
7. Other	1 (1.3)	1 (1.3)

Table 3. Febrile morbidity after total abdominal hysterectomy

Febrile Morbidity	Savlon (%) n = 75	Povidone-iodine (%) n = 75
1. No febrile morbidity	63 (84.0)	56 (74.67)
2. Febrile morbidity	12 (16.0)	19 (25.34)

Discussion

The incidence of febrile morbidity in the savlon group and povidone-iodine group was 16 (12/75) and 25.34 percent (19/75) respectively. No statistically significant difference was found between the two groups (p-value = 0.16, odds ratio was 1.78, 95%CI, 0.79 to 3.99) and adjusted odds was 2.09 (95%CI 0.86 to 5.10). The overall rate of febrile morbidity was 20.67%, which was rather low compared with other reports (i.e. range, 17-37.4 percent)[1,2,3,5,10].

All of the presented received a prophylactic antibiotic. Eason et al showed that antibiotic prophylaxis was associated with a protective effect for febrile morbidity (odds ratio 0.60, 95%CI 0.24 to 1.49), their finding was not statistically significant[3]. When evaluating patients who received a prophylactic antibiotic in the vaginal povidone-iodine gel group, Eason found an adjusted odds ratio for febrile morbidity of 0.47 (95%CI 0.27-0.83) [3]. Zakut et al reported that antibiotic prophylaxis for patients undergoing abdominal hysterectomy should be reserved for immuno-compromised patients, and instead recommended local vaginal preparation with povidone-iodine before TAH would be an effective alternative[12].

In a later and larger study, Eason et al analyzed 1,570 women undergoing planned TAH in both 15 secondary and tertiary hospitals (all patients had undergone preoperative vaginal preparation with povidone-iodine solution) to determine whether a prophylactic antibiotic would decrease the risk of infectious morbidity after total abdominal hysterectomy among women with a low risk for infection. Prophylactic antibiotics were used in 993 of the 1,570 patients. Their study confirmed that prophylactic antibiotics decreased infectious morbidity (odds ratio = 0.65; 95%CI, 0.50 to 0.85; p < 0.002). They, therefore, suggested that a prophylactic antibiotic should be recommended for all women undergoing TAH[13].

Table 4. Risk factors for febrile morbidity after total abdominal hysterectomy

Risk factors	Odds ration (95%CI)	Adjusted odds ration (95%CI)
Age	0.87 (0.39, 1.93)	0.74 (0.30, 1.80)
Menstruation	1.05 (0.36, 3.07)	0.96 (0.29, 3.20)
Preoperative days before surgery	0.93 (0.37, 2.29)	0.91 (0.34, 2.44)
Postoperative days after surgery	4.26 (0.95, 18.99)	5.29 (1.06, 26.47)
Surgeon	1.98 (0.87, 4.49)	1.58 (0.57, 4.39)
Operative time	1.19 (0.50, 2.83)	0.91 (0.30, 2.70)
Estimated blood loss	0.80 (0.36, 1.77)	0.83 (0.34, 2.00)
Vaginal cuff suture	0.86 (0.32, 2.31)	1.36 (0.42, 4.42)
Skin incision	0.43 (0.19, 0.96)	0.41 (0.59, 1.56)

Febrile morbidity, the traditional measure for comparing the rates of infection in obstetrics and gynecology, is a particularly useful indicator for detecting post-hysterectomy illness arising from infection of tissue contiguous with the resection margin of the vaginal apex. Febrile morbidity is not specific to vault infection because it may have other causes; thus, it does not identify the site or type (i.e. cellulitis vs abscess) of infection[3].

The criteria for febrile morbidity must be objective, uniformly-documented, clinically-reasonable, and of public health importance. Consequently, the Centers for Disease Control Collaborative Review of Sterilization[2] used febrile morbidity as the principal outcome for infectious complications of hysterectomy. The present study, an additional reason for using febrile morbidity as an outcome measure was that temperature was measured and recorded regularly by personnel not apprised of the intention to assess febrile morbidity as an outcome.

The major limitation of the present study was the use of non-randomization, this design reflects the usual practice in our hospital. By comparison, the limitation of a randomized controlled trial for the authors' purposes would have a non-selection bias. Further study with a larger sample size, and randomized trial design should be conducted to verify the authors' findings.

In conclusion, preoperative vaginal preparation and the use of antibiotic prophylaxis before TAH decreased febrile morbidity. The effectiveness of preoperative vaginal douching with savlon (1:1000 solutions) and preoperative vaginal painting with povidone-iodine indicated no statistically significant effect on febrile morbidity. Therefore, preoperative vaginal preparation plus a prophylactic antibiotic should be used for all women undergoing TAH to reduce febrile morbidity.

Acknowledgments

This research was supported by the Department of Obstetrics and Gynecology with grant support from the Faculty of Medicine, Khon Kaen University. The authors wish to thank the study participants, the nurses and gynaecologists. The authors wish to thank Mr. Bryan Roderick Hamman for reviewing the manuscript.

References

1. Pothinam S, Sirinavasatian P, Lumbiganon P. Febrile and infectious morbidity after abdominal hysterectomy at Srinagarind Hospital. J Med Assoc Thai 1992; 75: 178-83.
2. Dicker RC, Greenspan JR, Strauss LT, Cowart MR, Scally MJ, Peterson HB, et al. Complications of abdominal and vaginal hysterectomy among women of reproductive age in the United States. The Collaborative Review of Sterilization. Am J Obstet Gynecol 1982; 144: 841-8.
3. Eason EL, Sampalis JS, Hemmings R, Joseph L. Povidone-iodine gel vaginal antisepsis for abdominal hysterectomy. Am J Obstet Gynecol 1997; 176: 1011-6.
4. Eason E, Wells G, Garber G, Hemmings R, Luskey G, Gillett P, et al. Antisepsis for abdominal hysterectomy: a randomised controlled trial of povidone-iodine gel. BJOG 2004; 111: 695-9.
5. Buphasiri P, Chongsomchai C, Wongproamas N, Ounchai J, Suwannachat B, Lumbiganon P. Effectiveness of vaginal douching on febrile and infectious morbidities after total abdominal hysterectomy: a multicenter randomized controlled trial. J Med Assoc Thai 2004; 87: 16-23.
6. Shapiro M, Munoz A, Tager IB, Schoenbaum SC, Polk BF. Risk factors for infection at the operative site after abdominal or vaginal hysterectomy. N Engl J Med 1982; 307: 1661-6.
7. Cruse PJ, Foord R. The epidemiology of wound infection: a 10-year prospective study of 62,939 wounds. Surg Clin North Am 1980; 60: 27-40.
8. Monif GR, Thompson JL, Stephens HD, Baer H. Quantitative and qualitative effects of povidone-iodine liquid and gel on the aerobic and anaerobic flora of the female genital tract. Am J Obstet Gynecol 1980; 137: 432-8.
9. Duignam NM, Lowe PA. Pre-operative disinfection of the vagina. J Antimicrob Chemother 1975; 1: 117-20.
10. Hemsell DL, Reisch J, Nobles B, Hemsdell PG. Prevention of major infection after elective abdominal hysterectomy: individual determination required. Am J Obstet Gynecol 1983; 147: 520-8.
11. Eason EL. Vaginal antisepsis for hysterectomy: a review of the literature. Dermatology 1997; 195 (Suppl 2): 53-6.
12. Zakut H, Lotan M, Bracha Y. Vaginal preparation with povidone-iodine before abdominal hysterectomy. A comparison with antibiotic prophylaxis. Clin Exp Obstet Gynecol 1987; 14: 1-5.
13. Eason EL, Wells GA, Garber GE, Hopkins ML. Prophylactic antibiotics for abdominal hysterectomy: indication for low-risk Canadian women. J Obstet

Gynaecol Can 2004; 26: 1067-72.
14. Markham SM, Rock JA. Preoperative care. In: Rock JA, Jones HW III, editors. Te Linde's operative gynecology. 9th ed. Philadelphia: Lippincott Williams & Wilkins; 2003: 103-22.
15. Hager WD. Postoperative infections: prevention and management. In: Rock JA, Jones HW III, editors. Te Linde's operative gynecology. 9th ed. Philadelphia: Lippincott Williams & Wilkins; 2003: 195-207.
16. Buphasiri P, Lumbiganon P, Wongproamas N. Preoperative vaginal douching for total abdominal hysterectomy in Thailand. Thai J Obstet Gynaecol 1999; 11: 229-32.

การเตรียมช่องคลอดก่อนการผ่าตัดมดลูกออกทางหน้าท้อง เพื่อป้องกันภาวะไข้ภายหลังการผ่าตัด ระหว่างวิธีการสวนล้างด้วยน้ำยา savlon และวิธีการทาด้วย povidone-iodine solution

กุลธิดา โสวะภาสน์, สุกรี สุนทราภา, ชวนชม สกนธวัฒน์

***วัตถุประสงค์**: เพื่อเปรียบเทียบประสิทธิภาพของการเตรียมช่องคลอด ระหว่างวิธีการสวนล้างโดยการใช้ savlon solution และวิธีการทาด้วย povidone-iodine solution ในการลดภาวะไข้ ภายหลังการผ่าตัดมดลูกออกทางหน้าท้อง*

***วิธีการศึกษา**: Clinical trial*

***วัสดุและวิธีการ**: แบ่งผู้ป่วยจำนวน 150 คน ที่ได้วางแผนไว้ว่าจะทำการผ่าตัดมดลูกออกทางหน้าท้องในโรงพยาบาลศรีนครินทร์ ออกเป็นสองกลุ่มที่เท่ากัน กลุ่มแรกได้รับการสวนล้างช่องคลอดด้วย savlon (1:1000 solutions) และกลุ่มที่สองได้ทาช่องคลอดด้วย povidone-iodine (1% solution) ก่อนการผ่าตัดมดลูกออกทางหน้าท้อง ผู้ป่วยทุกคนได้รับยาปฏิชีวนะ Cefazolin 1 กรัมฉีดเข้าทางเส้นเลือดดำ การประเมินผลจะดูจากอุบัติการณ์ภาวะไข้ที่เกิดขึ้นภายหลังการผ่าตัด*

***ผลการศึกษา**: อุบัติการณ์ภาวะไข้หลังการผ่าตัดโดยรวมทั้งหมดคิดเป็นร้อยละ 21 โดยพบว่าอุบัติการณ์ภาวะไข้หลังการผ่าตัด ในกลุ่มแรก และ ที่สองคิดเป็นร้อยละ 16 (12 ใน 75 ราย) และ 25 (19 ใน 75 ราย) ตามลำดับ ซึ่งไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ (p-value = 0.16, odds ratio= 1.78 (95%CI 0.79 ถึง 3.99) และ adjusted odds ratio = 2.09 (95%CI 0.86 to 5.10)*

***สรุป**: ประสิทธิภาพของการเตรียมช่องคลอด ระหว่างวิธีการสวนล้างโดยการใช้ savlon (1:1000 solutions) และวิธีการทาด้วย povidone-iodine (1% solution) ร่วมกับการให้ยาปฏิชีวนะ ในการลดภาวะไข้หลังการผ่าตัดมดลูกออกทางหน้าท้อง พบว่าไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ*