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Factors Effect to Duration of Postoperative Bladder Self Catheterization in Radical Hysterectomy

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ABSTRACT

Objective To determine factors that effect to duration of postoperative bladder self catheterization in radical hysterectomy.

Method A 5-year retrospective review of 531 women undergoing radical hysterectomy for cervical cancer was performed.

Results Duration of postoperative bladder self catheterization was significantly related to the extent of parametrium resection and vaginal cuff length. Perioperative complications, operative time, operative blood loss and postoperative urinary tract infection were not significantly associated with duration of postoperative bladder self catheterization.

Conclusion Extent of parametrium and vagina length in radical hysterectomy was significantly associated with duration of postoperative bladder self catheterization.

Keywords: Parametrium, Vaginal length, Radical hysterectomy, Catheterization

Introduction

Radical hysterectomy is primarily a surgical approach for the management of early invasive cervical cancer. Bladder dysfunction is the most common complication following radical hysterectomy. These disturbances were associated to the interruption of the autonomic fibers innervating the bladder during the resection of parametrium and vaginal cuff[1], especially in posterior portion of cardinal ligament and distal portion of uterosacral ligament.[2-5] Development and duration of bladder disorders have been related to the extent of radicality.[6-7] Thus, a reduced radicality has been proposed to decrease the rate of bladder dysfunction.[8]

Most study showed improved voiding function when a radical hysterectomy is modified (compaired class II and class III operation).[9-14]

The present study was undertaken in an attempt to define objectively the extent of surgical resection by measured and related this to bladder function in women undergoing radical hysterectomy and determined other factors that may influences to the duration of postoperative bladder dysfunction.

Materials and methods

Women who underwent radical hysterectomy for the treatment of cervical cancer between January 2001 and December 2005 were identified in Chiang Mai University gynecologic oncology service database. The medical records of these patients were reviewed, and data relative to patient demographics, operative technique, length of resected parametrium and vaginal cuff, perioperative complications, operative blood loss, operative time, postoperative urinary tract infection and duration of postoperative self catheterization were analysed.

Patients were treated with radical hysterectomy. Parametrium and vaginal length were measured immediately after end of the operation. Bilateral measurement taken from paracervix to the widest point of parametrial tissue. Measure of vaginal cuff length from four quadrants, anterior, posterior, right and left. The measurement used for analysis were mean parametrium length and mean vaginal cuff length. Foley catheter were removed on postoperative day 7. Patients were placed on a strict voiding schedule consisting of voiding at 4-hr intervals. After each void, patients were instructed in intermittent self-catheterization (ISC) and measured the postvoid residuals (PVR). If the PVR was greater than 75 ml each patient was instructed to continue the strict voiding schedule with ISC for PVR until her PVR was less than 75 ml for two consecutive voids. We defined bladder dysfunction as the persistent need for ISC.

Patients had postoperative follow up at 6 weeks, then every 3 months during the first year, every 4 months until 2 years, every 6 months until 5 years then annually, except whose PVR remained greater than 75 ml when discharge from the hospital, were followed weekly until PVR less than 75 ml for two consecutive voids. During the period of catheterization, regular urinalysis was carried out and antibiotic therapy was applied when indicated.

Data were recorded in an electronic database and analyzed with SPSS 15 statistical software. The t-test and Spearman's correlation were used for statistical analysis of the data. A value of $P < 0.05$ was considered statistically significant.

Results

During the 5-year study, 642 radical hysterectomies were performed. Twenty one charts could not be found, 79 charts were incomplete operative record and 11 patients loss to follow up, so the remaining 531 patients were analysed.

The mean age was 44.6 years (range from 25 to 74), the median parity was 2 (range from 0 to 13), 32 (6%) patients was obesity, 106 (20%) patients had underlying medical diseases, prior cone biopsy and LEEP 41(7.7%) and 112(21.1%) patients, respectively. Three hundred and ninety three(74%) were stage 1B1 and 348 (65.5%) had squamous cell carcinoma cell type.(Table 1)

Five hundred and fourteen(96.8%) patients underwent laparotomy, and 17(3.2%) patients by laparoscopy. Mean operative time of laparotomy and laparoscopy was 3 hr 43 min(range 2-7 hrs) and 7 hr 51 min(range 4 hr 30 min-10 hr 20 min), respectively. Mean operative blood loss of laparotomy and laparoscopy was 828 cc (range 100-4,500 cc) and 639 cc (range 100-2,600 cc), respectively. There were 4(0.8%) unilateral operative injuries to the ureter and 5(0.9%) injuries to the bladder.

The mean length of resected parametrium was 3.14 cm(range 0.5-7.0), mean length of excised vaginal cuff was 3.0 cm(range 0.5-6.0). Postoperative urinary tract infection occurred in 146(27.5%) patients. Mean duration of postoperative bladder self catheterization was 35 days(range from 7 to 1,650 days), with a breakdown as follows: < 2 weeks = 211(39.7%) patients, 2-6 weeks = 238(44.8%) patients, 6 weeks-3 months = 50(9.4%) patients, 3-6 months = 24(4.5%) patients, > 6 months = 8(1.5%) patients.

Table 2 and 3 summarizes the statistical analysis evaluating the relationship between length of resected parametrium, length of excised vaginal cuff, perioperative ureter/bladder injury, operative time, operative blood loss, postoperative urinary tract infection and duration of postoperative bladder catheterization. Only length of resected parametrium

and vagina were significantly effected the duration of postoperative bladder self catheterization (P < 0.01). Perioperative complications, operative time, operative blood loss and postoperative urinary tract infection were not significantly associated with duration of postoperative bladder self catheterization.

Table 1. Demographics and Tumor Characteristics. (N=531)

			N(%)
Parity	0		17 (3.2)
	1		124 (23.4)
	2		262 (49.3)
	≥ 3		128 (24.1)
Obese (BMI ≥ 30 kg/m2)			32 (6.0)
Underlying disease		Hypertension	73 (13.7)
		Diabetes	28 (5.3)
		Others (thyriod, asthma, heart)	25 (4.8)
Prior cone biopsy			41 (7.7)
Prior LEEP			112 (21.1)
Prior cone biopsy and LEEP			2 (0.4)
Cervical cancer stage		1A1	10 (1.9)
		1A2	18 (3.4)
		1B1	393 (74.0)
		1B2	56 (10.5)
		2A	54 (10.2)
Histopathology		Adenocarcinoma	128 (24.1)
		Squamous cell carcinoma	348 (65.5)
		Adenosquamous carcinoma	39 (7.3)
		Small cell carcinoma	16 (3.0)

Table 2. Correlation between length of resected parametrium, length of excised vaginal cuff, operative time, operative blood loss and duration of postoperative bladder catheterization

	Duration of postoperative self-catheterization r (P-value)[a]
Length of resected parametrium	0.169 (<0.01)
Length of excised vaginal cuff	0.151 (<0.01)
Operative time	0.061 (NS)
Operative blood loss	0.041 (NS)

a Spearman' s correlation statistical analysis

Table 3. The relationship between perioperative ureter/bladder injury, postoperative urinary tract infection and mean duration of postoperative bladder self catheterization.

	Mean duration of self- catheterization (days)	P-value
Ureter/bladder complication		
No	35.04	0.741
Yes	26.33	
Postoperative UTI		
No	30.64	0.052
Yes	46.01	

Discussion

The incidence of lower urinary tract dysfunction after radical hysterectomy has been reported variously from 20 to over 80%(4). Disorders include both hypotonic and hypertonic bladder function, sensory loss, urgency, and incontinence. The most common pattern was incomplete emptying, thus the patient has to learn to stimulate the intrinsic neuromuscular mechanism by straining and other manipulations. There was progressive improvement in bladder function if overdistention and infection were avoided, thus patients required bladder drainage with an indwelling catheter or by intermittent self-catheterization (ISC) until bladder function had returned.[7]

Bladder dysfunction was defined in the present study as the persistent need for ISC. The incidence of bladder dysfunction in the present study is 80.1%.

Bladder dysfunction is most likely related to the interruption of both sympathetic and parasympathetic nerves supply the pelvis, especially in posterior portion (pars nervosa) of the cardinal ligament and distal portion of the uterosacral ligament, it looked like the more radical procedure carried the more significant risk of diminished urinary function.

Some studies have reported reducing morbidity with a less radical operation of cervical cancer.[9-14] All studies compared class II and III operation, which were either not clearly or not uniformly defined, vary in the amount of cardinal, uterosacral, uterovesical, vesicovaginal, paravaginal ligament and vagina that are removed, particularly as carried out by different surgeons. So, the authors attempted to define objectively measured the extent of parametrium and vaginal resection and related this to bladder function in women undergoing radical hysterectomy. The length of resected parametrium and vagina was significantly correlation to the duration of postoperative bladder self catheterization in the present study($P < 0.01$).

Some studies have also shown difference in blood loss and operative time relative to the extent of resection,[12-15] but there was no significantly correlated in the present study. As it was known that urinary tract infection and urinary tract injury may delay the recover of bladder function[7] but in the present study it was not correlate.

The weakness of this study is a retrospective study in nature, 111(17.3%) patients were excluded because incomplete record, loss follow up and record disappear. Others weakness is lack of informations influenced in postoperative bladder function such as preoperative bladder function and adjuvant postoperative radiotherapy. Christ and Gunselmann demonstrated that 57% of woman had urinary symptoms and/or abnormal urological findings prior to radical hysterectomy[16].

Overall, the likelihood of chronic urinary tract dysfunction following radical hysterectomy may be

related to preoperative function, the degree of surgical neurological injury and subsequent injuries by bladder overdistention and adjuvant postoperative radiotherapy[17].

In conclusion, the extent of operation is only factor that effect to postoperative bladder function. Thus an attempt to reduce bladder dysfunction by either reduced radicality or directed nerve sparing, these techniques preserve the autonomic nerves traversing the outer-deep portion of uterosacral ligament, the caudal-lateral portion of the cardinal ligament and the vesicovaginal ligament.

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ปัจจัยที่มีผลต่อระยะเวลาที่ต้องสวนปัสสาวะหลังทำการผ่าตัดมดลูกแบบถอนรากถอนโคน

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วัตถุประสงค์ *: เพื่อแสดงปัจจัยที่มีผลต่อระยะเวลาที่ต้องสวนปัสสาวะหลังทำการผ่าตัดมดลูกแบบถอนรากถอนโคน*

รูปแบบการวิจัย *: การวิจัยเชิงพรรณนา แบบเก็บข้อมูลย้อนหลัง*

สถานที่ทำการศึกษา *: หน่วยมะเร็งวิทยา ภาควิชาสูติศาสตร์และนรีเวชวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ โรงพยาบาลมหาราชนครเชียงใหม่*

วิธีการศึกษา *: ศึกษาข้อมูลย้อนหลังของสตรีที่วินิจฉัยเป็นมะเร็งปากมดลูกและได้รับการผ่าตัดมดลูกแบบถอนรากถอนโคน โดยเก็บข้อมูลย้อนหลังจากเวชระเบียนผู้ป่วย บันทึกการผ่าตัด บันทึกการตรวจติดตามหลังการผ่าตัดของหน่วยมะเร็งวิทยา ภาควิชาสูติศาสตร์และนรีเวชวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ ตั้งแต่เดือนมกราคม 2544 จนถึงเดือนธันวาคม 2548*

ผลการศึกษา *: สตรีที่วินิจฉัยเป็นมะเร็งปากมดลูกและได้รับการผ่าตัดมดลูกแบบถอนรากถอนโคน จำนวน 531 ราย พบว่าระยะเวลาที่ต้องสวนปัสสาวะหลังทำการผ่าตัดมีความสัมพันธ์กับความกว้างของพารามีเทรียมและความยาวของช่องคลอดที่ทำการผ่าตัดอย่างมีนัยสำคัญทางสถิติ ในขณะที่การบาดเจ็บต่อทางเดินปัสสาวะขณะผ่าตัด, ระยะเวลาการผ่าตัด, ปริมาณการเสียเลือดจากการผ่าตัด และการติดเชื้อของทางเดินปัสสาวะหลังการผ่าตัดไม่พบว่ามีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับระยะเวลาที่ต้องสวนปัสสาวะหลังทำการผ่าตัด*

สรุป *: ความกว้างของพารามีเทรียมและความยาวของช่องคลอดที่ได้จากการผ่าตัดมดลูกแบบถอนรากถอนโคนมีความสัมพันธ์กับระยะเวลาที่ต้องสวนปัสสาวะหลังทำการผ่าตัดอย่างมีนัยสำคัญทางสถิติ*

คำสำคัญ *: พารามีเทรียม, ความยาวของช่องคลอด, การผ่าตัดมดลูกแบบถอนรากถอนโคน, การสวนปัสสาวะ*