Prevalence of Endometriosis among Patients with Adenomyosis and/or Myoma Uteri Scheduled for a Hysterectomy

Wanapa Naphatthalung MD*,
Sopon Cheewadhanaraks MD*

** Department of Obstetrics and Gynecology, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand*

Objective: *To estimate the prevalence of endometriosis among patients between 40 and 50-years-old that required a hysterectomy with an indication of adenomyosis and/or myoma uteri.*
Material and Method: *This cross-sectional study was conducted in a university hospital. Two hundred twenty consecutive premenopausal women, aged 40 to 50-years-old, with symptomatic adenomyosis and/or myoma uteri, and scheduled for a total abdominal hysterectomy were enrolled. During laparotomy, a systematic inspection of the pelvis was carried out to identify endometriosis.*
Results: *The presence of endometriosis was observed in 63 (28.6%) of 220 patients. The prevalence of endometriosis was 19 in 47 (40.4%) patients with adenomyosis, 30 in 132 (22.7%) patients with leiomyomas, and 14 in 41 (34.1%) patients with adenomyosis and leiomyomas. The rate of coexistence of endometriosis in the women with adenomyosis was statistically significantly higher than in the patients with leiomyomas (p-value = 0.032). Younger age, moderate-severe pain, and short menstrual interval were shown to be independent risk factors for endometriosis among these patients.*
Conclusion: *The prevalence of endometriosis in the women with adenomyosis was higher than in those with leiomyomas.*

Keywords: *Adenomyosis, Endometriosis, Hysterectomy, Myoma uteri, Prevalence*

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Endometriosis, adenomyosis, and myoma uteri are common benign gynecologic diseases and may occur together. The prevalence of histologically confirmed adenomyosis in surgical series varied from 14 to 66%[1]. The estimated cumulative incidence of myoma uteri by age 50 was found to be over 80% for black women and nearly 70% for white women[2]. Based on the few reliable data, the prevalence of endometriosis among women of reproductive age can be reasonably assumed to be around 10%[3]. Concurrent endometriosis was observed in 9 to 10% of patients with adenomyosis[4,5]. Coexistence of endometriosis was reported to be in 12 to 86% of patients with myoma uteri[6,7].

When childbearing has been completed, patients with symptomatic adenomyosis, as well as, symptomatic myoma uteri should have a hysterectomy. In case there is coexistence of endometriosis with pain or moderate-severe stage endometriosis, these patients should consider bilateral salpingo-oophorectomy (BSO) to prevent the recurrence of endometriosis or pain, especially when they are 40 years of age or older. However, a definite diagnosis of endometriosis will be made only when performing the laparotomy. Thus, the discussion about BSO has to be done preoperatively. The prevalence of endometriosis among patients with preoperative diagnosis of adenomyosis and/or myoma uteri is important information that patients need to know. Therefore, the primary objective of the present study was to estimate the prevalence of surgical diagnosis of endometriosis among patients requiring a hysterectomy with an indication of adenomyosis and/or myoma uteri, whose ages were 40 to 50-years-old. The secondary objective was to determine the risk factors for the presence of endometriosis.

Correspondence to:
Cheewadhanaraks S, Department of Obstetrics and Gynecology, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla 90110, Thailand.
Phone: 081-896-4008, Fax: 074-429-617
E-mail: csophon@medicine.psu.ac.th

Material and Method

The present cross-sectional study was approved by the institutional review board, and conducted in a university hospital between May 2011

and June 2012. Eligible patients were consecutive premenopausal women aged 40 to 50-years-old that had no prior surgical diagnosis of endometriosis, and had symptomatic adenomyosis and/or myoma uteri scheduled for a total abdominal hysterectomy with or without BSO. Exclusion criteria were gynecologic malignancy and emergency operations. All of the subjects gave written informed consent to the study. The preoperative diagnosis of adenomyosis and/or myoma uteri was confirmed by ultrasonography. Patients were counseled on the possibility that concurrent endometriotic lesions might be present. Their decisions to have BSO performed or not were elicited before the surgery.

Symptomatic adenomyosis was defined as adenomyosis with pain and/or with menorrhagia and/or with mass effect; symptomatic leiomyomas as leiomyomas with pain and/or with menorrhagia and/or with mass effect and/or with rapid increase in size (*i.e.* an increase in size of four weeks or more over one year). The pain symptoms were categorized into dysmenorrhea, dyspareunia, and non-menstrual pain. Moderate-severe pain was defined as pain causing analgesic need in every cycle and/or interruption of sexual intercourse and/or absence from work.

Patient demographics and characteristics were collected by history taking. The uterine size and nodularity of cul-de-sac were evaluated by pelvic examination before surgery. During laparotomy a careful and systematic inspection of the pelvis was carried out for all of the patients to identify endometriosis. Typical peritoneal endometriotic lesions were diagnosed by visualization of lesions at surgery[8]. Histologic examination reports were used to confirm the diagnosis of atypical peritoneal endometriosis, ovarian endometrioma, rectovaginal endometriosis, leiomyoma uteri, and adenomyosis. Endometriosis was staged according to the revised American Society for Reproductive Medicine classification[9].

For a level of confidence of 95%, an expected prevalence of 12%[6], and a precision of 5%, the sample size of the present study was calculated to be 163 patients. Univariate analysis of risk factors for endometriosis and the difference in prevalence between groups were evaluated with the Chi-squared test. In addition, multiple logistic regression analysis was used to identify independent risk factors for the presence of endometriosis. All statistical tests were two-sided, and probability values less than 0.05 were considered significant.

Table 1. Patient demographics and preoperative characteristics

Characteristics (n = 220)	No. (%)
Average age (year) ± SD	45.6 ± 2.9
Body mass index (kg/m^2) ± SD	24.1 ± 5.7
Nulliparous	75 (34.1)
Moderate-severe pain	92 (41.8)
Nodularity of cul-de-sac	17 (7.2)

Results

Two hundred twenty patients were enrolled in the present study. Histopathologic examination reports confirmed the diagnosis of adenomyosis in 47 (21.4%) subjects, leiomyomas in 132 (60%) subjects, and adenomyosis with leiomyomas in 41 (18.6%) subjects. Patient demographics and preoperative characteristics are shown in Table 1. The percentage of patients with dysmenorrhea, dyspareunia, and non-menstrual pain were 41.8% (n = 92), 4.5% (n = 10), and 10.9% (n = 24), respectively. The proportion of subjects who had menorrhagia, mass effect, and rapid increase in uterine size were 20.0% (n = 44), 10.0% (n = 22), and 11.4% (n = 25), respectively. At time of surgery, the uterine size was 14.3 ± 4.0 weeks by average.

The presence of endometriosis was observed in 63 (28.6%) of 220 patients. The prevalence of endometriosis was 19 in 47 (40.4%) patients with adenomyosis, 30 in 132 (22.7%) patients with leiomyomas, and 14 in 41 (34.1%) patients with adenomyosis and leiomyomas. The rate of coexistence of endometriosis in the women with adenomyosis was statistically significantly higher than in those with leiomyomas (p-value = 0.032). The percentage of patients who had minimal, mild, moderate, and severe disease was 30.2% (n = 19), 20.6% (n = 13), 9.5% (n = 6), and 39.7% (n = 25), respectively. Pain symptoms were experienced in 71.4% (n = 45) of the patients with endometriosis.

In the univariate analysis, the proportion of patients whose age was 45 years or less (p-value = 0.007), the proportion of patients with moderate-severe pain (p-value = 0.005), with nodularity of cul-de-sac (p-value = 0.021), and with menstrual interval of 28 days or less (p-value = 0.021) were found to be significantly higher in patients with endometriosis than those without endometriosis (Table 2). Younger age (odds ratio [OR], 2.13; 95% confidence interval [CI], 1.14-3.96; p-value = 0.018), moderate-severe pain (OR, 1.95; 95% CI, 1.05-3.63; p-value = 0.034), and

Table 2. Univariate analysis of risk factors for endometriosis

Characteristic	Patients with endometriosis No. (%) (n = 63)	Patients without endometriosis No. (%) (n = 157)	p-value
Age of 45 years or less	38 (60.3)	63 (40.1)	0.007*
Body mass index of 25 kg/m^2 or less	36 (57.1)	98 (62.4)	0.468
Nulliparous	21 (33.3)	54 (34.4)	0.881
Moderate-severe pain	36 (57.1)	57 (36.3)	0.005*
Nodularity of cul-de-sac	9 (14.3)	8 (5.1)	0.021*
Menstrual interval of 28 days or less	34 (54.0)	58 (36.9)	0.021*
Menstrual duration of 7 days or more	16 (25.4)	32 (20.4)	0.416
Menarche at 13 years or less	38 (60.3)	82 (52.2)	0.276

* Statistical significant, $p < 0.05$

Table 3. Multivariate analysis of risk factors for endometriosis

Characteristic	Odds ratio	95% confidence interval	p-value
Age of 45 years or less	2.13	1.14-3.96	0.018*
Moderate-severe pain	1.95	1.05-3.63	0.034*
Nodularity of cul-de-sac	2.49	0.84-7.39	0.099
Menstrual interval of 28 days or less	1.91	1.03-3.56	0.040*

* Statistical significant, $p < 0.05$

short menstrual interval (OR, 1.91; 95% CI, 1.03-3.56; p-value = 0.040) were demonstrated to be independent risk factors for endometriosis among these patients (Table 3). Fifty-three patients had endometriosis-associated pain or moderate-severe endometriosis. Of these, only 19 (36%) subjects had BSO.

Discussion

The authors observed the concomitant diagnosis of endometriosis in nearly 30% of patients with preoperative diagnosis of adenomyosis and/or myoma uteri. A drawback of the present study is the possibility of selection bias. Since the present study was performed in a university hospital, the subjects cannot be considered representative of the general population that has adenomyosis and/or myoma uteri scheduled for a hysterectomy in all hospitals.

Vercellini et al[4] and Parazzini et al[5] reported that concomitant diagnosis of endometriosis was made in 9-10% of patients with adenomyosis. In contrast, 40.4% of the presented patients with adenomyosis were found to have endometriosis. This difference may be partly related to the fact that all of the presented patients were premenopausal women but about 40 to 50% of the patients in the other two studies[4,5] were postmenopausal patients. No significant association was found between adenomyosis and the presence of endometriosis in the two studies from Milan[4,5]. However, the prevalence of endometriosis in women with adenomyosis in the present study was statistically significantly higher than in women with fibroids. The authors' findings support the hypothesis that there is a strong association between endometriosis and adenomyosis[10-12].

Among patients with fibroids, the percentage of patients who had a concurrent diagnosis of endometriosis in the present study (22.7%) was different from those in the other studies (12-86%)[6,7]. This discrepancy in the prevalence of endometriosis in women with myoma uteri may be partially due to the selection bias, the difference in the proportions of patients who had pain symptom, and the variation in ages of the patients. The study of Huang et al[7] was conducted in a referral base having a great interest in endometriosis. In contrast, the Italian study[6] was a multicentric study. A complaint of pain is another factor influencing the prevalence of endometriosis among these patients[7]. The authors also found that moderate-severe pain was an independent risk factor for endometriosis. In the present study 42% of patients had moderate-severe pain while 55% of women experienced pain in the study of Huang et al[7]. Finally,

it is well established that the risk of endometriosis increases after menarche and then falls as menopause approaches[6,7,13,14]. In the present study, a patient age of 45 years or less was another independent risk factor for endometriosis. Thus, the authors' findings confirm the view that women approaching menopause have a decreased risk of endometriosis.

The last independent risk factor for endometriosis in the present study was menstrual interval of 28 days or less. Women with a short menstrual interval are exposed to an increased lifelong risk of retrograde menstruation. According to the implantation theory, these women have an increased risk of endometriosis.

In conclusion, the prevalence of endometriosis in women with adenomyosis was higher than in those with leiomyomas.

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Potential conflicts of interest

The authors have no conflicts of interest to disclose.

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ความชุกของเยื่อบุมดลูกต่างที่ในกลุ่มผู้ป่วย adenomyosis และ/หรือ เนื้องอกกล้ามเนื้อเรียบของมดลูก ซึ่งมีกำหนดการตัดมดลูก

วรรณภา ณ พัทลุง, โสภณ ชีวะธนรักษ์

วัตถุประสงค์: *เพื่อประมาณการความชุกของเยื่อบุมดลูกต่างที่ในผู้ป่วยอายุ 40 ถึง 50 ปี และได้รับการตัดมดลูกด้วยข้อบ่งชี้ adenomyosis และ/หรือ เนื้องอกกล้ามเนื้อเรียบของมดลูก*

วัสดุและวิธีการ: *ผู้นิพนธ์ได้ศึกษาแบบตัดขวางในโรงพยาบาลมหาวิทยาลัยแห่งหนึ่ง ผู้ป่วยในการศึกษา ได้แก่ ผู้ป่วยก่อนวัยหมดระดูอายุ 40 ถึง 50 ปี ซึ่งเป็น adenomyosis และ/หรือ เนื้องอกของกล้ามเนื้อเรียบของมดลูกที่มีอาการและได้รับการตัดมดลูกทางหน้าท้อง ระหว่างการผ่าตัดเปิดหน้าท้องได้สำรวจอุ้งเชิงกรานอย่างเป็นระบบเพื่อระบุหาเยื่อบุมดลูกต่างที่*

ผลการศึกษา: *พบเยื่อบุมดลูกต่างที่ในผู้ป่วย 63 ราย ใน 220 ราย (ร้อยละ 28.6) ความชุกของเยื่อบุมดลูกต่างที่เท่ากับร้อยละ 40.4 (19 ราย) ในผู้ป่วย adenomyosis ร้อยละ 22.7 (30 ราย) ในผู้ป่วยเนื้องอกกล้ามเนื้อเรียบ และร้อยละ 34.1 (14 ราย) ในผู้ป่วยเป็น adenomyosis และเนื้องอกกล้ามเนื้อเรียบ อัตราปรากฏเยื่อบุมดลูกต่างที่ในผู้ป่วย adenomyosis สูงกว่าผู้ป่วยเนื้องอกกล้ามเนื้อเรียบอย่างมีนัยสำคัญทางสถิติ (p-value = 0.032) อายุน้อยกว่า อาการปวดปานกลางถึงรุนแรง และระยะรอบระดูสั้น เป็นปัจจัยเสี่ยงอิสระต่อการตรวจพบเยื่อบุมดลูกต่างที่ในผู้ป่วยเหล่านี้*

สรุป: *ความชุกของเยื่อบุมดลูกต่างที่ในผู้ป่วย adenomyosis สูงกว่าในผู้ป่วยเนื้องอกกล้ามเนื้อเรียบของมดลูก*