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Comparison of complications of vaginal hysterectomy in patients with leiomyomas and in patients with adenomyosis

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Abstract. We reviewed 1246 vaginal hysterectomies performed at Handa City Hospital between January 1984 and December 1996. We divided the patients into 2 groups: those with leiomyomas ($n = 893$) and those with adenomyosis ($n = 353$). There was no difference in operative time and estimated blood loss between the 2 groups when analyzed by uterine weight. However, adenomyosis was associated with an increased risk of bladder injury.

Key words: Leiomyomas – Adenomyosis – Vaginal hysterectomy – Bladder injury

Introduction

Vaginal hysterectomy is preferable to an abdominal hysterectomy because of lower morbidity and faster recovery [2]. The rate of vaginal hysterectomy is around 20–25% and has remained virtually unchanged in the last decade [4, 12, 13]. The decision to perform a hysterectomy abdominally or vaginally is often based not only on the clinical indications but on familiarity and experience of the individual surgeon. Teaching of vaginal hysterectomy should be incorporated into residency training programs. In addition, more information on benefit and risk should be given to patients for decision-making. Recently, some authors reported that even an enlarged uterus could be removed vaginally by morcellation [4, 5, 8]. However, to date no study has addressed the results according to uterine pathology.

Materials and Methods

We therefore made a retrospective survey of all vaginal hysterectomies (with or without salpingo-oophorectomy) performed at Handa City Hospital between January 1984 and December 1996

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where leiomyoma or adenomyosis were found on pathological examination. The conditions excluded are:

- pregnancy,
- malignancy,
- pelvic inflammatory disease,
- endometriosis,
- prolapse or descendence of the uterus,
- urinary incontinence,
- adnexal mass (>hen egg size).

1,246 patients were included in this study and stratified into 2 groups, group A had one or more leiomyoma ($n=893$) and group B had adenomyosis ($n=353$). When leiomyoma and adenomyosis coexisted, the pathology occupying more than 70% was adopted. If either pathology did not reach 70%, the case was excluded. We compared intra-operative complications, estimated blood loss, and operative time in the 2 groups.

Values are expressed as the mean±SD. The 2-tailed Student *t* test was used for continuous data and χ^2 analysis for discrete data. A p value <0.05 was considered statistically significant.

Results

Table 1 summarizes patient characteristics and operative outcomes in groups A and B. There was no significant difference in mean age, parity, and operative time. The mean weight of the removed uteri and the estimated blood loss were significantly higher in group A than in group B.

The difference in the estimated blood loss might have been due to the different uterine size. To assess this point, 3 categories of uterine weight were used size (Table 2). Women with uterine weight exceeding 1,000 g were excluded because the number was too small. As expected, the estimated blood loss increased as the uterine weight did in both groups A and B. However, in each category of uterine weight, there was no difference in the estimated blood loss between groups A and B.

Overall, 31 of the 1,246 women (2.5%) included in our analysis experienced one or more of the following major complications: bleeding more than 1,000 mL, blood transfusion, conversion to laparotomy, reoperation for control of hemorrhage, bladder injury, and bowel injury (Table 3). The incidence of each complication of the 2 groups was not significantly different except for bladder injury, which was seen in 0.7% and 2.3% of groups A and B, respectively. No pa-

Table 1. Patients' characteristics and operative outcomes, minimal and maximal values are indicated in parenthesis

	Group A	Group B	Significance
n	893	353	
Age [years]	43.9±6.6 (29–55)	44.3±5.2 (30–56)	NS
Parity	2.2±0.7 (0–5)	2.3±0.8 (0–6)	NS
Uterine weight [g]	334.0±189.1 (81–1,480)	259.8±135.7 (70–1,100)	<0.01
Operative time [min]	43.5±18.7 (12–190)	42.4±19.7 (11–175)	NS
Estimated blood loss [mL]	221.2±214.0 (15–2,488)	190.8±177.8 (16–2,043)	<0.05

Group A=leiomyomas, group B=adenomyosis

Table 2. Comparison between leiomyoma (group A) and adenomyosis (group B) by uterine weight, minimal and maximal values are indicated in parenthesis

	Group A	Group B	Significance
Uterine weight 300 g or less			
n	494	264	
Age [years]	43.4±4.4 (27–55)	43.9±4.7 (30–56)	NS
Parity	2.2±0.7 (0–5)	2.2±0.8 (0–6)	NS
Uterine weight [g]	207.3±56.6 (81–300)	201.5±55.1 (70–300)	NS
Operative time [min]	39.2±16.5 (12–116)	39.3±15.7 (11–110)	NS
Estimated blood loss [mL]	152.1±115.0 (15–1,141)	158.6±119.5 (16–734)	NS
Uterine weight 301–500 g			
n	262	71	
Age [years]	44.4±4.1 (31–55)	45.6±3.6 (35–53)	<0.05
Parity	2.1±0.6 (0–4)	2.4±0.6 (1–4)	<0.05
Uterine weight [g]	393.1±57.0 (303–500)	370.1±51.2 (310–500)	<0.01
Operative time [min]	45.0±15.3 (20–118)	47.9±18.3 (21–110)	NS
Estimated blood loss [mL]	243.6±184.5 (39–1,130)	242.8±158.1 (50–931)	NS
Uterine weight 501–1,000 g			
n	130	17	
Age [years]	44.8±4.2 (33–54)	46.7±4.3 (40–53)	NS
Parity	2.2±0.6 (1–5)	2.2±0.8 (1–4)	NS
Uterine weight [g]	646.4±120.5 (505–980)	660.7±113.6 (510–875)	NS
Operative time [min]	54.5±24.0 (24–190)	60.5±33.9 (35–175)	NS
Estimated blood loss [mL]	395.8±328.1 (50–2,488)	424.6±461.3 (82–2,043)	NS

Table 3. Comparative list of major complications in groups

	Group A (leiomyomas)	Group B (adenomyosis)	Significance
n	893	353	
Bleeding ≧1,000 mL	13	2	NS
Blood transfusion	3	4	NS
Laparotomy	4	2	NS
Reoperation	0	1	NS
Bladder injury	6	8	<0.05
Bowel injury	1	0	NS

tients sustaining bladder injury had a past history of laparotomy or cesarean section.

The procedure could not be completed vaginally in 4 of 893 and 2 of 353 in groups A and B, respectively. These cases are summarized in Table 4.

Discussion

This is probably the first study to show that women with adenomyosis having a vaginal hysterectomy have a greater risk of bladder injury than women with leiomyomas who have the same operation. Overall, the incidence of bladder injury was

Table 4. Vaginal hysterectomy requiring conversion to abdominal procedure

Patient No	Age [years]	Gravida	Para	Uterine weight [g]	Estimated blood loss [mL]	Blood transfusion[a]	Remarks
Leiomyoma							
1	48	4	2	454	1,130	No	Previous laparotomy (ectopic pregnancy), adhesion (omentum, ileum, sigmoid colon)
2	49	2	2	540	2,488	Yes	
3	45	5	2	839	1,201	Yes	Previous C/S, adhesion (omentum)
4	52	2	2	1,250	1,111	No	Adhesion (rectum, sigmoid colon)
Adenomyosis							
5	53	2	2	830	2,043	Yes	Adhesion (rectum, left adnexa)
6	43	3	2	1,100	1,120	Yes	Adhesion (right ovary)

[a] Packed red blood cells

1.1% (14/1,246), which is comparable to previous reports [2, 3, 6]. Surprisingly, it was 2.3% in patients with adenomyosis and significantly higher than in patients with leiomyomas (0.7%). The definite reason for this is unknown, but it may be due to greater difficulty in identifying the supravaginal septum and the vesicovaginal or vesicocervical planes.

Because of the large number of women in our analysis and because our surgeons were skilled it is unlikely that the increased risk of bladder injury in adenomyosis is attributable to chance. The recent introduction of laparoscopically assisted vaginal hysterectomy (LAVH) raises the possibility of LAVH decreasing the incidence of bladder injury. Meikle et al. [9] stated that there was no significant difference in the rate of bladder injury between LAVH and conventional vaginal hysterectomy.

Contrary to our expectations, there was no difference in operative time and estimated blood loss between vaginal hysterectomy with leiomyomas and those with adenomyosis when analyzed with respect to uterine weight (Table 2). We used the techniques of myomectomy, hemisection, and/or morcellation because these techniques facilitate resection of an enlarged uterus.

Most cases of failed vaginal hysterectomy were due to extensive adhesion (Table 4). Previous pelvic surgery and/or pelvic pain should raise suspicious of adhesions but adhesions have been found in up to 25.6% of women who have a negative history and a normal pelvic examination [10]. Lee et al. [7] found that when hysterectomy was performed for a preoperative diagnosis of pelvic pain, the final pathologic examination was normal in 37%. Therefore, it is impossible to predict which patients will have pelvic adhesions unless they have a preliminary laparoscopy.

A reduction in the uterine bulk with gonadotropin-releasing hormone (GnRH) is another way of reducing intraoperative complications. Preoperative use of GnRH for the patients with leiomyoma has shown the considerable reduction of uterine volume and decrease in intraoperative morbidity and operative blood loss [1, 11]. However its effect on adenomyosis has not been evaluated.

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