Gynecol Surg (2009) 6:223–228
DOI 10.1007/s10397-008-0455-1

ORIGINAL ARTICLE

Women's preference for laparoscopic or abdominal hysterectomy

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Received: 10 November 2008 / Accepted: 24 November 2008 / Published online: 16 December 2008

Abstract In the present study, women's preferences on advantages and disadvantages of laparoscopic hysterectomy (LH) and abdominal hysterectomy (AH) have been studied. Patients' preferences were evaluated in individual, structured interviews in women scheduled for hysterectomy and questionnaires in nurses. Forty-three patients and 39 nurses were included. After general information, 84% of patients and 74% of nurses preferred LH over AH. This preference did not change after supplying more detailed information or after hysterectomy. The avoidance of complications was indicated as the most important factor in the decision. More than half of the women evaluated a difference of 1% as the maximum acceptable risk of major complications. When confronted with scenarios based on current evidence, both patients and nurses prefer LH over AH. This study supports further implementation of LH in clinical practice. The actual major complication rate in hysterectomy, however, is perceived as high.

Keywords Patients' preference · Laparoscopic hysterectomy · Abdominal hysterectomy · Interview · Questionnaire

I declare that the experiments comply with the current laws of the Netherlands.

No financial support and no conflict of interest to declare. I had full control of all primary data of the study and I would allow the journal to review the data if requested.

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Introduction

Laparoscopic hysterectomy (LH) has been introduced in 1989 as an alternative to abdominal hysterectomy (AH) [1]. Since then, both approaches have been compared in more than 30 randomized controlled trials. A meta-analysis of these trials demonstrated that LH was associated with less operative blood loss, less postoperative pain, and less infectious morbidity, as well as a shorter hospital stay and more rapid return to normal activities. On the other hand, longer operating times and more urinary tract injuries have been reported for LH [2, 3], which seems partly due to the learning curve [4, 5].

The introduction of laparoscopy in gynecology develops at a slow pace. In 2002, only 4% of hysterectomies in the Netherlands was performed laparoscopically [6]. The Council for Public Health and Health Care, an independent body that advises the Dutch government, supports the implementation of minimal access surgery in health care [7]. Some gynecologists are enthusiastic about the new technique and judge that the patients are better off with a

quick recovery. Other gynecologists, however, are reserved due to the higher major complication rate, and their concerns have been affirmed in a recent report of the Dutch Health Care Inspectorate [8]. The Inspectorate checks on care providers, care institutions, and companies concerning their compliance with Dutch laws and regulations. In the report, they have denounced the increased risk of major complications in laparoscopic surgery.

Although the choice for LH or AH can only be made after a weighing of the pros and cons of the procedure, at present, patients have not been involved systematically in the decision for the introduction of LH. The assessment of patient weighing of advantages and disadvantages could indicate the need for individualized treatment decisions if patients make different trade-offs. On the other hand, if a large majority of patients clearly favor LH or AH, this could either stimulate the implementation of LH or lead to an abandoning of the procedure.

Nowadays, the choice for a treatment option is more based on shared decision-making as compared with the past, although it is known that doctors still underestimate the patients' desire for information and the involvement in the decision-making [9]. A recent survey in Scotland showed that half of the women with benign menstrual problems scheduled for either vaginal, abdominal, or laparoscopic hysterectomy had not been informed on advantages and disadvantages of treatment options other than hysterectomy [10]. Moreover, half of these women had not been informed on advantages and disadvantages of the different approaches to hysterectomy, and one in every five women did not even know which approach to hysterectomy was planned in her individual case [11].

Although both LH and AH are viable options in women with a moderately enlarged uterus, the preference of women has, to our knowledge, not been assessed systematically. The aim of the present paper was to investigate women's preferences for LH or AH as well as the main factors underlying these preferences.

Materials and methods

We studied both patients scheduled for hysterectomy as well as nurses. Patients were recruited at the Máxima Medical Center between January 2005 and April 2007. The Máxima Medical Center is a teaching hospital with 865 beds on two locations in the south of The Netherlands. The gynecology department of the Máxima Medical Center is experienced in minimally invasive surgery, and the first LH was performed in 1992. The study was performed without financial support. Patients scheduled for hysterectomy for benign disease in whom vaginal surgery was not suitable (i.e., an enlarged uterus beyond 12 weeks' gestation), but in whom LH and/or AH were feasible, were included in the study. A LH and/or AH was indicated in case the size of the uterus was not beyond 18 weeks' gestation. In case the uterus was larger than 18 weeks' gestation, the patient was always scheduled for AH. The inclusion was not consecutive but occurred arbitrarily depending on the presence of members of the study group and the availability of the research nurse who performed the interviews. Exclusion criteria were inability to speak Dutch and an expected endometrial carcinoma of stage II or higher. The study was exempt from Institutional Review Board approval since the interview/questionnaire did not concern intimate personal information.

Nurses were recruited from the departments of pediatrics, obstetrics, general surgery, and internal medicine at the Radboud University Nijmegen Medical Centre, the Netherlands. Inclusion criteria were being female and not being involved in the care of hysterectomy patients. Ten nurses received personal information on the study. Each of these ten nurses received ten questionnaires to distribute to colleagues, and thus, 100 questionnaires were sent out. The nurses were asked to imagine that they were scheduled to undergo hysterectomy.

The patient group was assessed through a structured face-to-face interview taken by one research nurse. These interviews lasted for approximately 1 h. Patients were invited for a second interview approximately 6 weeks after the procedure. The nurses completed the questionnaires without assistance of the researchers and returned them by mail.

The interview or questionnaire was introduced with the hypothetical situation that vaginal hysterectomy was not feasible and that there were two alternative approaches to hysterectomy, of which none was superior, both having specific advantages and disadvantages. The first two questions addressed the attitude of women to the decision-making process in general, including the amount of information the woman desired to receive on specific advantages and disadvantages of treatments, as well as the desired involvement in decision-making.

Subsequently, general information was provided on LH and AH, without provision of specific numeric rates or figures. In short, AH was described as a procedure requiring an abdominal incision, associated with less major complications (e.g., injury to adjacent organs and major blood loss) and more minor complications (e.g., infections and wound-healing problems). LH was presented as a minimal access procedure, with a risk of conversion to AH. However, a successful LH would result in a quicker recovery. Subsequently, women were asked for the first time whether they would prefer LH or AH.

In the next part of the interview, the two approaches to hysterectomy and their advantages and disadvantages were

explained in detail in a text of 600 words of which a summary is shown in Table 1. The presented complication rates, conversion rates, duration of hospital stay, and duration of recovery were based on a recent randomized controlled trial performed by our group [12], a meta-analysis on the subject [3], two prospective studies [4, 13], and three retrospective case series [5, 14, 15] including over 10,000 LHs. The figures and rates presented were mainly applicable to experienced surgeons beyond their learning curve.

When women indicated that they had read and understood the supplied detailed information, they were asked again to indicate a preference for LH or AH. Subsequently, the preference was assessed for the hypothetical situation of equal complication rates for both approaches to hysterectomy and no risk of conversion in LH. Women were furthermore asked whether they would accept a twofold increased major complication rate in LH as compared with AH and whether they thought a possible conversion from LH to AH to be acceptable. Subsequently, women were asked to indicate on a numerical scale the highest complication rate in hysterectomy and the highest conversion rate from LH to AH, that they still considered being acceptable.

Finally, the importance of individual advantages and disadvantages of LH and AH was rated on a five-point Likert scale (very unimportant until very important) for the following factors: avoidance of complications, avoidance of conversions, restriction of operation times, limitation of the recovery period, and the avoidance of abdominal scars.

Normally distributed data were presented as mean and standard deviations, whereas skewed distributed data were presented as medians with a range. In case of dichotomous variables, data were presented as absolute numbers with percentages. Differences between groups (patients versus nurses, and preoperative versus postoperative assessment in the patients) were tested with *t* tests and Mann–Whitney tests, as appropriate. Chi-square tests were used for dichotomous data.

Data were analyzed in SPSS 13.0 software (SPSS, Inc., Chicago, IL, USA). p values<0.05 were considered to indicate statistical significance.

Results

Ninety-four women were eligible during the study period, of whom 70 underwent LH and 24 underwent AH. We interviewed 43 patients, of whom 32 were scheduled for LH and 11 for AH. Their mean age was 46.1 (standard deviation 7.4) years. Five women who were scheduled for AH did not have an actual choice for LH due to an enlarged uterus or endometriosis. One of the laparoscopic procedures was converted to an AH during the procedure due to a bleeding that could not be controlled by laparoscopy. Thirty-six women (84%) returned for the postoperative interview.

Thirty-nine nurses completed the questionnaire. The return rate was 39%. Six nurses (15%) had undergone prior hysterectomy. The mean age of the nurses was 41.8 (standard deviation 10.5) years.

There was no difference in the desired amount of information on advantages and disadvantages of treatment options and the desired involvement in the decision-making between patients and nurses. Overall, 81% of women preferred LH. There was no difference in treatment preferences between the nurses and the patients ($p=0.382$; Table 2).

At the postoperative interview, two women had changed their preoperative preference. One woman changed her preference from LH to AH, whereas the other switched from AH to LH.

Table 1 Detailed information on differences in laparoscopic and abdominal hysterectomy

	LH	AH
Type of anesthesia	General	General
Removal uterus, cervix and ovaries	Identical to AH	Identical to LH
Incision	4 small incisions	Low transverse incision
Risk of conversions during surgery from LH to AH	10%	None
Operation time (minutes)	130	90
Major complications[a]	More frequent as in AH	Less frequent as in LH
Injury to adjacent organs	1%	0.5%
Minor complications[a]	Less frequent as in AH	More frequent as in LH
Hospital stay (days)	3–4	4–6
Pain in first 3 weeks after surgery	Less painful as in AH	More painful as in LH
Return normal activities (weeks)	3–6	5–8

LH laparoscopic hysterectomy, *AH* abdominal hysterectomy

[a] Examples of major complications were injury to adjacent organs and major blood loss. Examples of minor complications were infections and wound healing problems

The median acceptable risk of major complications in hysterectomy was 1.0% in the patients and 0.5% in the nurses (p=0.004; Table 2). The patients scheduled for LH, however, accepted a significantly higher major complication rate as compared with the patients scheduled for AH (1.0% and 0.5% respectively, p=0.001). A major complication rate of 7.2%, such as reported in LH in the large eVALuate study, when disregarding the intraoperative conversions [16], was unacceptable to 96% of women.

The median acceptable conversion rate from LH to AH during surgery was 50% and 10% in the patients and nurses, respectively (p<0.001; Table 2). The patients scheduled for LH accepted a higher conversion rate as compared with the patients scheduled for AH, but the difference was not statistically significant (55% and 20% respectively, p=0.096). A conversion rate from LH to AH of 4%, such as reported in the eVALuate study [16], was unacceptable to 9% of women.

In Fig. 1, the importance of treatment characteristics for patients and nurses are presented as 100% stack bars. The avoidance of complications was rated more important by the patients as compared with the nurses (p=0.015). Other comparisons were not significantly different.

Discussion

This paper presents a study on women's preferences for LH or AH and the main treatment-related factors influencing their preference. We found that 81% of the women preferred LH, in spite of disadvantages such as a higher risk of major complications in the laparoscopic approach. However, 4% of the women preferred AH even in case of a hypothetical situation of equal complication rates and no risk of conversion to LH. These preferences did not change following a more detailed explanation of the two procedures or after experiencing hysterectomy in the near past.

The main factor influencing the women's treatment preference was the avoidance of complications. More than half of the patients and three quarters of the nurses experienced 1% as the maximum acceptable risk of major complications in hysterectomy, and none of the 11 women scheduled for AH accepted a major complication risk over 2%.

Considerable effort has been spent to obtain valid estimates for the figures and percentages on the differences between LH and AH in the detailed information of the interview. A difficulty in this respect, however, was that the meta-analysis of randomized controlled trials on LH versus

Table 2 Women's preferences for laparoscopic or abdominal hysterectomy

		Patients[a] (n=43)	Nurses (n=39)	Test for differences
Desired information		1 [1–8][b]	1 [1–10][b]	p=0.76
Desired involvement		3.4 [1–9][b]	3 [1–10][b]	p=0.80
Preferred approach (after global information)	Prefers LH	36 (84)	29 (74)	p=0.56
	No preference	1 (2)	1 (3)	
	Prefers AH	6 (14)	9 (23)	
Preferred approach (after detailed information)	Prefers LH	37 (86)	29 (76)[c]	p=0.38
	No preference	0	1 (3)	
	Prefers AH	6 (14)	8 (21)	
Preferred approach (equal complications and no conversions)	Prefers LH	39 (91)	33 (92)[c]	p=0.90
	No preference	2 (5)	2 (6)	
	Prefers AH	2 (5)	1 (3)	
Major complications	Maximum acceptable rate	0.5 [0–10][b]	1.0 [0–10][b]	p<0.01
Conversions to laparotomy	Maximum acceptable rate	50 [0.1–99][b]	10 [0.1–75][b]	p<0.01
Accepts doubled major complication rate in LH	Yes	31 (72)	17 (44)	p=0.04
	Maybe	6 (14)	16 (41)	
	No	6 (14)	6 (15)	
Accepts conversion in LH in case needed	Yes	39 (91)	31 (79)	p=0.18
	Maybe	1 (2)	5 (13)	
	No	3 (7)	3 (8)	

AH abdominal hysterectomy, *LH* laparoscopic hysterectomy, *Test for differences* test for differences among patients and nurses, *p p* value for difference between groups using Mann–Whitney tests and chi-square tests as appropriate, *Desired information* desired amount of information on advantages and disadvantages of treatment options on a 1 to 10 visual analogue scale, where 1 represents most information, *Desired involvement* desired level of involvement in medical decision-making on a 1 to 10 visual analogue scale, where 1 represents most involvement.

[a] In the patients, the pre-operative preferences are shown.

[b] Median [range], and absolute numbers (percentage)

[c] Data from one and three nurses are missing, respectively

AH [3] reported a much higher complication rate as compared with large prospective [4, 13] and retrospective case series [5, 14, 15]. This discrepancy might be explained by differences in learning curve in the various studies [2, 3, 17–20]. In the meta-analysis on hysterectomy, the cumulative risk of injury to urinary tract, bowels, and blood vessels was 4.4% and 2.7% in LH and AH, respectively [3]. This complication rate in LH was in agreement with the 4.6% injury rate to urinary tract or bowels as occurring during the learning curve of LH in a large prospective Finnish study [4]. In the present study, less than 5% of women evaluated this high complication rates as acceptable (Fig. 1). Since more and more surgeons will be thoroughly trained in LH, we have presented the complication rates as achieved by experienced surgeons (i.e., 0.5% and 1% urinary tract injuries in AH and LH respectively) in the present study. Consequently, the treatment preferences presented are mainly applicable to a wide range of surgeons who have finished their learning curve in LH.

The fact that the majority of women scheduled for hysterectomy considered a 1% probability of major complications as their maximum acceptable risk also indicates that other alternatives for hysterectomy should be considered prior to surgery. In a recent preference study among women suffering from dysfunctional uterine bleeding, we found that a majority of the patients scheduled for an endometrial ablation or a levonorgestrel-releasing intrauterine device were inclined to take a risk of 50% likelihood of treatment failure to avoid a hysterectomy [21].

The risk of conversion in LH was less important to the women in the decision-making on approach to hysterectomy (Fig. 1). There was, however, a minority of women who did not accept the risk of conversion and would prefer AH to avoid this uncertainty.

We have used face-to-face interviews to assess patients' preferences. Both strength and limitation of these personal interviews is the flexible nature [22]. It allows tailoring information and explication to the need of the individual patient, whereas interviewers' influences make the technique prone to bias and need to be minimized. Since the results from the questionnaires used in the nurses group were largely in line with the results from the patients group, this suggests absence of major bias in this respect.

Half of the women scheduled for AH did not have an actual choice for LH, and all patients had already made a personal decision on the desired approach to hysterectomy at the time of the first interview. Women could feel free to state their preference without consequences for their personal situation. It can be difficult, however, for women to reconsider the choices they have just made facing their own doctor. This might have caused some opportunistic answers in line with the planned approach, e.g., caused by a psychological mechanism called cognitive dissonance reduction [23]. This might be the reason for (part of) the lower acceptance of complications and conversions and the fact that the less importance was ascribed to the speed of recovery in patients scheduled for AH as compared with patients scheduled for LH. Another explanation for this phenomenon might be selection bias, as women with a lower acceptance of complications and conversions already had opted for AH.

We have included a group of nurses in the study since, by virtue of their profession, we expected them to be more experienced in judging complex issues, such as complica-

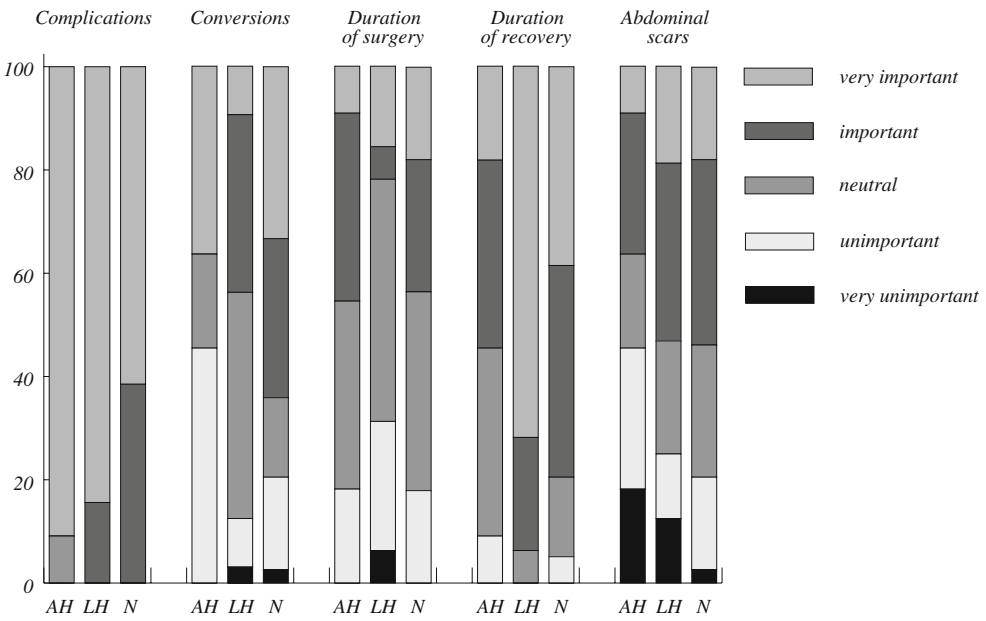

Fig. 1 Treatment characteristics. The 100% *stack bars* represent the importance which is assigned to five treatment characteristics of hysterectomy by patients scheduled for abdominal hysterectomy (*AH*) or laparoscopic hysterectomy (*LH*), and nurses (*N*)

tion rates, conversion rates, and postoperative recovery. Since treatment preferences in the nurses group were largely in line with the patients group, this consolidates our findings. The maximum acceptable rates of complications and conversions, however, were lower among nurses as among patients. Since the nurses did not experience the necessity for hysterectomy and are professionally involved in patients having complications, this might be the explanation for the difference in willingness to accept these adverse events.

In conclusion, the majority of women prefer LH over AH and accept the risk of conversion to laparotomy. The complications, however, are a major issue of concern, and the actual major complication rate in hysterectomy is perceived as high.

Advantages and disadvantages of all feasible approaches to hysterectomy need to be discussed with each woman scheduled for hysterectomy, which may include the proposal of a LH as performed by a colleague. The fact that a recent study showed that half of the women was not informed on the pros and cons of different approaches and one in every five women did not even know which approach to hysterectomy was planned for them [11] indicates that there is a need for improvement in this perspective.

The evident preference for LH reported by patients in this study is conflicting with the slow implementation of LH in clinical practice. There is a strong call for LH from society to be heard, and measures to stimulate the further implementation of LH are needed. This can be either by expansion of LH training to gynecologists or the centralization of LH in laparoscopic centers.

Acknowledgment We thank Mrs. Marijne Bremer for interviewing all the patients.

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