European Journal of Obstetrics & Gynecology and Reproductive Biology 195 (2015) 67–71

Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb

Cervix removal at the time of hysterectomy: factors affecting patients' choice and effect on subsequent sexual function

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ARTICLE INFO

Article history:
Received 3 September 2015
Received in revised form 18 September 2015
Accepted 25 September 2015

Keywords:
Total hysterectomy
Subtotal hysterectomy
Decision-making process
Cross sectional study
Sexual function

ABSTRACT

Objectives: To identify factors that influence the decision-making process on the type of hysterectomy (total or supracervical) and the impact of surgery of subsequent sexual function.
Study design: A cross-sectional survey was undertaken on 212 women who underwent total laparoscopic hysterectomy (TLH) or laparoscopic supracervical hysterectomy (LSH) for benign conditions at the Division of Minimally Invasive Gynecology at Brigham and Women's Hospital in Boston, MA, USA. We analyzed the factors that patients considered in their decision-making process, their sexual function after surgery and their satisfaction with the surgery overall. Demographic and perioperative outcomes were also collected.
Results: A total of 115 women answered the survey, for a response rate of 54.24%. The patients who underwent LSH ($n = 54$) and TLH ($n = 61$) were overall similar in terms of baseline factors and perioperative outcomes. Patients reported that the physician was the main source of information regarding decision to remove or retain the cervix (79.13%). The physicians' recommendation was viewed as very or extremely important (83.68%) to the decision-making process, followed by concerns regarding their future sex life (51.09%). Almost half of the women reported that hysterectomy had no impact on sexual function. No statistically significant differences were seen between groups regarding satisfaction with sexual function ($p = .822$), impact on sexual function ($p = .753$) or recommendation of this surgery to other women ($p = .505$).
Conclusion: Concerns about sexual health were important to women when considering the type of hysterectomy to undergo. Cervix removal or retention at the time of hysterectomy did not impact women's sexual function after mean follow-up of 15.2 months.

Introduction

Hysterectomy is the most common gynecological surgery among women [1,2]. When hysterectomy was first performed abdominally, the cervix was often left in situ due to concerns about bleeding and infection. By the mid-20th century, there was a shift toward total hysterectomy due to improvements in surgical and antiseptic technique, along with increasing concern regarding risk of cervical cancer in the residual cervical stump. Due to the introduction of routine pap smear screening and the evolution of laparoscopic hystectomy techniques, supracervical hysterectomy has once again become a viable option for women [3].

The benefits and disadvantages of cervix removal or retention at the time of hysterectomy have been investigated in several studies; one of the most notable studies was a randomized controlled trial of abdominal hysterectomies which found no differences in bowel/bladder function, quality of life or sexual function between the two groups [4]. Another randomized trial found that subtotal hysterectomy did not decrease the incidence of pelvic organ prolapse after 12 months when compared to total hysterectomy [5]. A previous study from our institution addressed issues of postoperative recovery from laparoscopic supracervical hysterectomy (LSH) and total laparoscopic hysterectomy (TLH) [6]. The women in this prospective study who underwent LSH had a significantly greater improvement in short-term postoperative quality of life scores. The American College of Obstetricians and Gynecologists (ACOG) has stated that there is no medical indication to retain the cervix at the time of hysterectomy [7]. A Cochrane systematic review of three randomized controlled trials did not show any significant differences in sexual function, urinary

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http://dx.doi.org/10.1016/j.ejogrb.2015.09.040
0301-2115/

tract or bowel symptoms between subtotal and total hysterectomy [8]. However, many women still choose to keep their cervix at the time of hysterectomy, often citing cultural preference or concerns about post-operative sexual functioning [9].

The objective of this study is to identify factors that influence the decision-making process on the type of hysterectomy (total or supracervical) and the impact of surgery of subsequent sexual function

Material and methods

This study was approved by the Partners Institutional Review Board (protocol number 2014P001271, approval date June 19th 2014). A retrospective chart review was performed using a surgical procedure database from the Minimally Invasive Gynecological Surgery Division, Brigham and Womens Hospital, Boston MA, USA. All women who underwent a total or supracervical laparoscopic hysterectomy for a benign indication in 2013 from this division were included. All surgeries were performed by three of the authors (JIE, SLC and KCW). Exclusion criteria included symptomatic pelvic organ prolapse as indication for surgery, as the cervix may be retained in these cases to minimize risk of mesh complications [10].

A cross-sectional study was undertaken to ascertain the decision-making process surrounding cervix removal or retention at time of hysterectomy. Topics included the patients' source of information and their evaluation of how important these factors were in their decision, as well as satisfaction with the surgery, current sexual function and patients' perception of how the surgery impacted their sex life. The questionnaire was first sent to expert gynecologists in the Obstetrics and Gynecology Department at Brigham and Women's Hospital for feedback regarding the survey's questions, clarity and content validity. After making modifications based on the gynecologists' feedback, we performed a pilot questionnaire of 25 women randomly chosen from the patient cohort and asked for their feedback on this questionnaire, which was further refined based on the pilot participant responses.

The final version of the study questionnaire was composed of multiple-choice and open-ended questions, and was administered by mail, email or online (via REDCap software) [11], depending on the patient's preference. The questionnaire was initially sent by mail to 212 patients (83 LSH and 129 TLH) along with an introductory letter. Three additional rounds of contact were performed, alternating mailing and calling patients, in order to increase response rate and to decrease selection bias. Subjects implied consent to take part in the study by agreeing to complete the questionnaire. The following baseline variables were abstracted from patient medical records: age (years), body mass index, race, gravidity, parity, prior laparoscopy/laparotomy and indications for hysterectomy. Perioperative outcomes which were collected included: operating time (defined as time from incision to skin closure, minutes), estimated blood loss (ml), intraoperative complications (defined as visceral, vascular or nerve injury, estimated blood loss greater than 1000 ml or serious anesthesia complication), uterine weight (grams), need for blood transfusion, length of stay (days), postoperative complications (Clavien–Dindo classification) [12] and need for reoperation.

Statistical analysis was performed with the aid of Stata 12.0 (College Station, TX). Continuous variables were described as means and medians with standard deviations and ranges. Normality was analyzed and confirmed by the Kolmogorov–Smirnov test. Chi-square or Fisher's exact tests were used for categorical variables and Student *t*-test or Wilcoxon rank sum test for numerical variables. All *p* values were two-sided, and values less than .05 were considered significant. Missing data were considered as missing at random; however, no imputation techniques were performed.

Results

A total of 115 women responded to the survey, including 54 LSH and 61 TLH patients, for a response rate of 54.2%. Table 1 outlines patient demographics and indications for surgery in this cohort. The women who underwent LSH versus TLH were similar with the exception of a higher BMI in the TLH group (28.6 ± 5.6 vs. 25.9 ± 4.4; $p = .006$). The majority of women were premenopausal (84.3%). There was a greater proportion of women with fibroids in the LSH group as compared to the TLH group (52.4% vs. 45.7%; $p = .045$). Table 2 demonstrates perioperative outcomes between the groups. A higher proportion of women in the TLH group underwent removal of one or both ovaries (32.7% vs. 11.1%; $p = .011$). The LSH group was associated with larger uterine size (460.6 ± 608.5 vs. 272.4 ± 239.7; $p = .032$); however, there was no significant difference in operating time ($p = .220$) or estimated blood loss ($p = .151$). One bladder injury occurred in a TLH indicated for stage IV endometriosis, and it was immediately repaired. No statistically significant differences were seen between the groups with regard to length of stay, intraoperative or postoperative complications, need for transfusion or reoperation.

With regard to the factors patients thought influenced their decision-making process to undergo subtotal or total hysterectomy (Fig. 1), most women (83.6%) reported that the recommendation of their physician was extremely important, followed by issues concerning their future sex life (51.0% of women rated as important). Most of women (86.9%) reported that physicians gave the option to them with regard to removal or retention of their cervix at the time of surgery. The surgeon was identified as the main source of patients' information (79.1%), followed by the internet (28.7%), friends and family (27.8%) and spouse or significant other (13.9%).

Table 3 presents information on patients' sexual function following hysterectomy. The length of follow-up between surgery and survey completion ranged from 10 to 21 months, for a mean follow-up of 15.2 months. The majority of women were having

Table 1
Patient baseline characteristics according to type of hysterectomy.

	TLH ($n = 61$)	LSH ($n = 54$)	*p* value
Age	46.5 ± 6.50	47.61 ± 5.89	.3447[a]
BMI (kg/m^2)	28.65 ± 5.67	25.96 ± 4.44	.0065[a]
Gravidity	2 [2,3]	2 [0,3]	.0109[b]
Parity	2 [1,3]	2 [0,2]	.0265[b]
Race			.723[c]
White	47 (77.05)	40 (74.07)	
Black	5 (8.20)	5 (9.26)	
Asian	1 (1.64)	3 (5.56)	
Hispanic/Latino	5 (8.20)	3 (5.56)	
American Indian	0 (0)	1 (1.85)	
Declined	3 (4.92)	2 (3.7)	
Menopausal status			.089[c]
Postmenopausal	4 (6.56)	3 (5.56)	
Premenopausal	32 (52.46)	36 (66.67)	
Perimenopausal	15 (26.23)	14 (25.93)	
Unsure	9 (14.75)	1 (1.85)	
Indication for hysterectomy			
Abnormal uterine bleeding	35 (57.38)	29 (53.7)	.692[c]
Fibroids	32 (54.10)	39 (72.22)	.045[c]
Pelvic pain/endometriosis	29 (47.54)	28 (51.85)	.644[c]
Previous laparoscopy	26 (42.62)	15 (27.78)	.097[c]
Previous laparotomy	30 (50.82)	23 (42.59)	.378[c]

Categorical variables are presented as *n* (%). Numerical variables are presented as mean ± SD or median (range).

[a] *t*-test.

[b] Wilcoxon rank-sum test.

[c] Chi-square test.