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Hysterectomy and sexual wellbeing: prospective observational study of vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy

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Members of the study group and selected questions from the questionnaire appear on bmj.com

Abstract

Objectives To compare the effects of vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy on sexual wellbeing.

Design Prospective observational study over six months.

Setting 13 teaching and non-teaching hospitals in the Netherlands.

Participants 413 women who underwent hysterectomy for benign disease other than symptomatic prolapse of the uterus and endometriosis.

Main outcome measures Reported sexual pleasure, sexual activity, and bothersome sexual problems.

Results Sexual pleasure significantly improved in all patients, independent of the type of hysterectomy. The prevalence of one or more bothersome sexual problems six months after vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy was 43% (38/89), 41% (31/76), and 39% (57/145), respectively (χ^2 test, $P=0.88$).

Conclusion Sexual pleasure improves after vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy. The persistence and development of bothersome problems during sexual activity were similar for all three techniques.

Introduction

Hysterectomy is the most common major gynaecological operation in the United Kingdom and United States.^{1,2} In the Netherlands, 32% of women will need hysterectomy during their lifetime.³ Historically the uterus has been regarded as the regulator and controller of important physiological functions, a sexual organ, a source of energy and vitality, and a maintainer of youth and attractiveness.⁴ Women are concerned

that hysterectomy may affect their sexual wellbeing or their sexual attractiveness. Hysterectomy has been reported as having adverse as well as beneficial effects on sexual wellbeing.⁵⁻¹⁰

Because hysterectomy disrupts the local nerve supply and anatomical relations of the pelvic organs, it has been thought that the function of these organs may be adversely affected. The idea that sexual wellbeing may differ according to type of hysterectomy is based on the hypothesis that the techniques damage the innervation and supportive structures of the pelvic floor differently. To what extent symptoms differ between total and subtotal hysterectomy has not been investigated.

If vaginal and abdominal removal of the uterus are both technically feasible, gynaecologists generally select vaginal hysterectomy because of reduced length of hospital stay, fewer complications, and reduced costs.¹¹⁻¹³ We compared the effects of vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy on sexual wellbeing.

Participants and methods

We recruited consecutive women who had been offered hysterectomy for a benign indication between January 1999 and July 2000. Exclusion criteria were endometriosis and symptomatic prolapse of the uterus as indications for hysterectomy.

Our prospective observational study took place in 13 teaching and non-teaching hospitals in the Netherlands over six months. Gynaecologists were free to choose a surgical hysterectomy technique. Perioperative treatment was similar in all participating hospitals.

Objectives and outcome measures

We compared the effects of different hysterectomy techniques on sexual wellbeing. All patients completed

Table 1 Sexual activity and reported general satisfaction about sexuality in 352 women before and after hysterectomy, according to type of surgery. Values are numbers (percentages) of patients unless stated otherwise

Characteristic	Vaginal hysterectomy (n=104)			Subtotal abdominal hysterectomy (n=84)			Total abdominal hysterectomy (n=164)		
	Before surgery	After surgery	P value	Before surgery	After surgery	P value	Before surgery	After surgery	P value
Sexually active*									
Yes	92	89 (97)		76	76 (100)		152	145 (95)	
No	12	8 (68)		8	6 (75)		12	3 (25)	
Mean (SE) general satisfaction*	7.0 (0.2)	7.5 (0.2)	0.014	7.0 (0.2)	7.5 (0.2)	0.016	6.9 (0.2)	7.4 (0.2)	0.006

*Data for both sexually active and not sexually active patients.

a questionnaire for screening sexual dysfunctions before hysterectomy and six months after surgery.^{14 15}

The questionnaire comprised 36 questions, which assessed the presence, frequency (measured with a five point Likert scale ranging from hardly ever to always), and experienced discomfort of sexual dysfunctions (measured with a five point Likert scale ranging from not at all to severely). The first 16 questions concerned the general perception of the patient's own sexuality and frequency of sexual activity. The next 18 questions concerned different types of problems during sexual activity. Questions were selected from this part of the questionnaire to identify patients with bothersome problems with lubrication, orgasm, pain or sensation in the genitals, and arousal (see table on bmj.com). We regarded symptoms to be bothersome when scored as "I am bothered," "I am much bothered," or "I am severely bothered." We regarded symptoms not to be bothersome when scored as "slightly bothered" or when the symptom was not present. The last two questions of the questionnaire concerned general satisfaction about sexuality (score 0 to 10). A higher score indicated more satisfaction.

Potential confounders

Data were collected on the maximum diameter of the uterus as assessed by ultrasonography, comorbidities (requiring drugs for diabetes, hypertension, hypercholesterolaemia, hyperthyroidism, hypothyroidism,

chronic obstructive pulmonary disease, or rheumatoid arthritis), duration of the operation, estimated blood loss, size of prolapse of the uterus in centimetres above the hymen (expressed as a negative number) or below the hymen (expressed as a positive number) as measured when pulling down the uterus under anaesthesia, simultaneously performed surgical procedures, complications due to surgery, and duration of hospital stay.

Analysis

We compared the number of patients who were sexually active, the reported frequency of intercourse, and the general satisfaction with sexuality both before and six months after surgery. The main analysis concerned only patients who were sexually active both before and after hysterectomy, and their characteristics were compared between surgical techniques. Comparisons were made between all pairs (three comparisons).

Logistic regression analysis was used to calculate odds ratios and 95% confidence intervals when the prevalence of persistent or newly developed symptoms differed by more than 10% between two groups. The odds ratios were adjusted for differences in other determinants of sexual wellbeing in multivariable logistic regression analysis. These included age, number of children, body mass index, size of uterus, prolapse of uterus, indication for hysterectomy, use of antidepressants, comorbidity, and duration of relationship with partner.

Table 2 Women's reported bothersome sexual problems that persisted or developed six months after hysterectomy, according to type of surgery. Values are numbers (percentages) of women unless stated otherwise

Reported bothersome sexual problem	Vaginal hysterectomy (n=89)		Subtotal abdominal hysterectomy (n=76)		Total abdominal hysterectomy (n=145)		P value*
	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery	
Problems with lubrication:	89	14 (16)	76	18 (24)	145	36 (25)	0.24
Present	25	9 (36)	22	12 (54)	39	22 (56)	0.25
Not present	64	5 (8)	54	6 (11)	106	14 (13)	0.56
Problems with orgasm:	89	19 (21)	76	16 (21)	145	32 (22)	0.98
Present	27	13 (48)	23	11 (48)	35	18 (51)	0.95
Not present	62	6 (10)	53	5 (9)	110	14 (13)	0.75
Problems with genital pain:	89	15 (17)	76	10 (13)	145	25 (17)	0.72
Present	26	8 (31)	16	5 (31)	45	18 (40)	0.68
Not present	63	7 (11)	60	5 (8)	100	7 (7)	0.66
Problems with sensation in genitals:	89	5 (6)	76	7 (9)	145	12 (8)	0.65
Present	6	1 (17)	9	3 (33)	13	5 (38)	0.64
Not present	83	4 (5)	67	4 (6)	132	7 (5)	0.94
Problems with arousal:	89	16 (18)	76	16 (21)	145	33 (23)	0.68
Present	30	12 (40)	26	14 (54)	44	23 (52)	0.50
Not present	59	4 (7)	50	2 (4)	101	10 (10)	0.42
Any sexual problem:	89	38 (43)	76	31 (41)	145	57 (39)	0.88
Present	49	29 (59)	43	23 (54)	81	45 (56)	0.85
Not present	40	9 (23)	33	8 (24)	64	12 (19)	0.80

* χ^2 test.

Results

Overall, 413 of 477 patients agreed to take part in our study. Of the 379 participating patients who had a male partner, 352 (93%) responded six months after surgery. Responders and non-responders had similar characteristics.

Sexual activity both before and after surgery did not differ between groups (table 1). In addition, of the patients who were sexually active, the frequency of intercourse was similar both before and after hysterectomy for all three techniques. The general satisfaction about sexuality improved after all techniques.

Of the 352 patients who responded, 310 reported being sexually active both before and after surgery: 89 (29%) underwent vaginal hysterectomy, 76 (25%) underwent subtotal abdominal hysterectomy, and 145 (47%) underwent abdominal hysterectomy. Ten patients who had been sexually active before surgery were no longer sexually active six months after surgery. Of the 32 patients who were not sexually active before hysterectomy, 17 (53%) became sexually active after surgery. We found no statistically significant differences among the surgical techniques for those patients who remained or became sexually active. Statistically significant differences among the groups were observed for maximum diameter of the uterus, prolapse of the uterus, indication for hysterectomy, and comorbidity (see bmj.com). The groups had a similar frequency of bothersome sexual problems before hysterectomy. Overall, after surgery there was a reduction in all sexual problems reported before hysterectomy; we found no statistically significant differences between the groups (table 2).

Compared with patients who had undergone vaginal hysterectomy those who had undergone total or subtotal abdominal hysterectomy had an increased, but not statistically significant, prevalence of persisting problems with lubrication (total, adjusted odds ratio 1.6, 95% confidence interval 0.7 to 3.6; subtotal 2.3, 0.4 to 11.9) and persisting problems with arousal (total, 1.2, 0.6 to 2.5; subtotal, 2.1, 0.5 to 8.6). Problems with sensation in the genitals more often persisted after total or subtotal abdominal hysterectomy than after vaginal hysterectomy. The number of patients who reported bothersome problems with sensation in the genitals before hysterectomy was too low to allow multivariate analysis.

Of the 173 patients who reported one or more bothersome sexual problems before hysterectomy, the problems were still reported by 29 (59%) after vaginal hysterectomy, 23 (54%) after subtotal abdominal hysterectomy, and 45 (56%) after total abdominal hysterectomy. New sexual problems developed in 9 (23%) patients after vaginal hysterectomy, 8 (24%) patients after subtotal abdominal hysterectomy, and 12 (19%) patients after total abdominal hysterectomy.

Discussion

Sexual wellbeing improves after vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy. The type of technique does not seem to determine the persistence or development of bothersome problems during sexual activity.

What is already known on this topic

Hysterectomy is the most common major gynaecological operation

Women are concerned that hysterectomy will affect their sexual attractiveness

Effects on sexual wellbeing may depend on the surgical technique

What this study adds

Sexual pleasure improves after hysterectomy

Sexual problems before surgery are less common after surgery

De novo sexual problems after hysterectomy are scarce

Sexual wellbeing does not depend on the surgical technique

Our study has several limitations. Firstly, the size of our study population may have been too small to detect slight differences. Although we obtained the required number of patients according to the power calculation, we question whether differences that are not observed in a sample size of 413 patients have any clinical relevance. Secondly, the patients were not randomised according to type of hysterectomy. Therefore, our results may have been confounded by baseline differences in factors that influence sexual wellbeing. We therefore prospectively documented potential confounders, and we used logistic regression analysis to adjust for these. Ideally, we would have performed a randomised controlled trial, but too few gynaecologists were willing to participate. The gynaecologist's decision to perform a surgical technique depends on personal preference and technical skills. The indication for hysterectomy also plays a part. Patients with unexplained abdominal pain are more likely to undergo abdominal surgery. However, there is considerable overlap between indications and operation techniques. It is therefore possible to adjust for prognostic differences between the groups.

Our study is the first to focus on sexual problems that are experienced as bothersome. We know of no studies that compare the effects of vaginal and abdominal hysterectomy on sexuality. In our study we observed no statistically significant differences in the persistence or development of bothersome sexual problems. A trend was observed towards a higher prevalence of persisting problems with lubrication and arousal after subtotal or total abdominal hysterectomy. This needs to be confirmed in a larger study.

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Dietary fat intake and risk of stroke in male US healthcare professionals: 14 year prospective cohort study

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Abstract

Objective To examine the association between intake of total fat, specific types of fat, and cholesterol and risk of stroke in men.

Design and setting Health professional follow up study with 14 year follow up.

Participants 43 732 men aged 40-75 years who were free from cardiovascular diseases and diabetes in 1986.

Main outcome measure Relative risk of ischaemic and haemorrhagic stroke according to intake of total fat, cholesterol, and specific types of fat.

Results During the 14 year follow up 725 cases of stroke occurred, including 455 ischaemic strokes, 125 haemorrhagic strokes, and 145 strokes of unknown type. After adjustment for age, smoking, and other potential confounders, no evidence was found that the amount or type of dietary fat affects the risk of developing ischaemic or haemorrhagic stroke. Comparing the highest fifth of intake with the lowest fifth, the multivariate relative risk of ischaemic stroke was 0.91 (95% confidence interval 0.65 to 1.28; P for trend = 0.77) for total fat, 1.20 (0.84 to 1.70; P = 0.47) for animal fat, 1.07 (0.77 to 1.47; P = 0.66) for vegetable fat, 1.16 (0.81 to 1.65; P = 0.59) for saturated fat, 0.91 (0.65 to 1.28; P = 0.83) for monounsaturated fat, 0.88 (0.64 to 1.21; P = 0.25) for polyunsaturated fat, 0.87 (0.62 to 1.22; P = 0.42) for *trans* unsaturated fat, and 1.02 (0.75 to 1.39; P = 0.99) for dietary cholesterol. Intakes of red meats, high fat dairy products, nuts, and eggs were also not appreciably related to risk of stroke.

Conclusions These findings do not support associations between intake of total fat, cholesterol, or specific types of fat and risk of stroke in men.

Introduction

Strong evidence indicates that type of dietary fat is more important than total fat intake in predicting risk

of coronary heart disease. Monounsaturated and polyunsaturated fats seem to have beneficial effects, but saturated fat and *trans* unsaturated fatty acids increase risk of coronary heart disease.¹ However, these associations do not seem to apply to stroke. Previous studies have even suggested an inverse relation between saturated fat or *trans* unsaturated fat intake and risk of stroke,^{2,3} but the mechanisms remain unclear. We prospectively examined the associations between intakes of total fat and specific types of fat and the risk of subtypes of stroke in the health professional follow up study.

Methods

Study population

The health professional follow up study is a cohort of 51 529 male US healthcare professionals, aged 40-75 years in 1986, who responded to a mailed questionnaire including a comprehensive survey of diet, lifestyle characteristics, and medical history. Non-dietary variables are updated every other year and dietary information every four years. For this analysis, we followed participants from 1986 to 2000. We excluded men who at baseline reported a previous diagnosis of cardiovascular diseases or diabetes mellitus. We also excluded men who had incomplete information or implausible total daily energy intake. A total of 43 732 men remained in the analyses.

Dietary and outcome assessment

We assessed dietary intake by using validated semiquantitative food frequency questionnaires in 1986, 1990, and 1994.⁴ We considered as endpoints all incident fatal and non-fatal strokes occurring between the return of the baseline questionnaire and 31 January 2000. A physician blinded to risk factor status reviewed participants' medical records, for which permission was obtained, when incident strokes were reported on a follow up questionnaire. Fatal stroke was reported by next of kin or colleagues or obtained from

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