Relation between hysterectomy and the irritable bowel: a prospective study

A Prior, K M Stanley, A R B Smith, N W Read

Abstract
Some women with irritable bowel syndrome date the onset of symptoms to previous hysterectomy. To assess prospectively the incidence of gastrointestinal symptomatology arising de novo after hysterectomy, and to study the effect of surgery on pre-existing symptoms, 205 women completed a symptom questionnaire before and six weeks and six months after surgery. Beforehand, symptoms suggestive of irritable bowel syndrome occurred in 22% of patients. At six months after operation, 60% of these had improved or were symptom free while 20% had increased symptomatology. New gastrointestinal symptoms were present more than once per week in 10% of previously asymptomatic women. Constipation predominant irritable bowel syndrome was the commonest symptom complex seen de novo, occurring more than once per week in 5% of the group. No relation was found between new symptomatology and the type of hysterectomy, oophorectomy, or the administration of peri-operative antibiotics. This study suggests that many women with pre-existing gastrointestinal symptomatology improve after hysterectomy. However, symptoms suggestive of irritable bowel syndrome do arise de novo in 10%. As hysterectomy is common, gastroenterologists can expect to see women presenting with post-hysterectomy problems.

Gynaecological and gastroenterological practice often overlap. Women attending gynaecological

clinics with pelvic pain have a high prevalence of symptoms suggestive of irritable bowel syndrome,^{1,2} and bowel habit and abdominal symptoms can vary with the menstrual cycle.^{3,4} In addition, it is not uncommon for women attending gastroenterological clinics with irritable bowel syndrome to date the onset of their symptoms to previous gynaecological surgery, particularly hysterectomy. There is, however, no prospective data concerning the relation between hysterectomy and irritable bowel syndrome, and it is possible that some women who present with irritable bowel syndrome after surgery have had similar symptoms before their operation.^{5,6}

This study aimed to assess prospectively the incidence of symptoms suggestive of irritable bowel syndrome arising de novo after hysterectomy and to study the effect of surgery on pre-existing gastrointestinal symptomatology.

Patients and methods

The study group consisted of 205 consecutive patients admitted for hysterectomy to the Jessop Hospital for Women between October 1988 and June 1989. Women over the age of 75 years and those requiring postoperative chemotherapy or radiotherapy were excluded from the study. The mean age of the population was 48 years (range 27-75). Dysfunctional uterine bleeding, fibroids, and prolapse accounted for the indications for surgery in 80% of the patient group. Only 5% of patients underwent hysterectomy primarily for pelvic pain. Altogether, 105 women had a vaginal hysterectomy and 100 a simple abdominal hysterectomy. Thirteen of the group also underwent bilateral oophorectomy and 58 had an anterior and/or posterior repair.

During their hospital admission and before hysterectomy, patients completed a questionnaire concerning the frequency and severity of abdominal pain, distension, bowel habit abnormalities, and urinary symptoms (frequency, urgency, and incontinence) in the 12 months before hysterectomy. A similar questionnaire was sent to patients six weeks and six months after surgery and returned by post. All questionnaires were completed by the patients and at no stage of the study were they directly interviewed. The questionnaire was based on that used in a previous study¹ and had been pretested on both patients and normal control subjects to ensure that the information collected was accurate. Abdominal pain was rated by the patients as mild, moderate, or severe. Constipation was defined as less than three stools per week or straining at stool on more than 25% of occasions

Department of Gastrointestinal Physiology and Nutrition, Royal Hallamshire Hospital, Sheffield
A Prior
N W Read

Department of Obstetrics and Gynaecology, Jessop Hospital for Women, Sheffield
K M Stanley
A R B Smith

Correspondence to: Dr A Prior, Department of Medicine, University Hospital of South Manchester, Manchester M20 8LR.

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TABLE 1 Overall gastrointestinal symptomatology before and after hysterectomy

Symptom	Before (n=205) % (95% CI)	6 Weeks (n=201) % (95% CI)	6 Months (n=191) % (95% CI)
Total IBS symptoms:			
>1/month	22 (16-28)	22 (16-28)	19 (14-25)
>1/week	11 (7-16)	16 (11-22)	10 (6-15)
IBS constipation:			
>1/month	10 (6-15)	12 (8-19)	9 (5-14)
>1/week	4 (2-8)	11 (7-16)	5 (2-8)
IBS diarrhoea:			
>1/month	6 (3-10)	5 (2-8)	4 (2-8)
>1/week	5 (2-9)	2 (·5-5)	3 (1-6)
IBS alternating:			
>1/month	6 (3-10)	5 (2-8)	6 (3-10)
>1/week	2 (·5-5)	3 (1-6)	2 (·5-5)
Non-IBS abdominal pain:			
>1/month	16 (11-22)	10 (6-15)	11 (7-10)
>1/week	8 (5-13)	7 (4-11)	5 (2-9)
Painless constipation:			
>1/month	6 (3-10)	4 (2-8)	4 (2-8)
>1/week	3 (1-6)	3 (1-6)	3 (1-6)
Painless diarrhoea:			
>1/month	2 (·5-5)	0·5 (·01-3)	1 (·01-3)
>1/week	1 (·01-3)	0·5 (·01-3)	0·5 (·01-3)

IBS=irritable bowel syndrome.

and diarrhoea defined as more than three loose stools per day. Case records were examined in order to establish parity, previous medical and surgical history, the clinical indication for hysterectomy, histological diagnosis, type of hysterectomy, use of perioperative antibiotics, and occurrence of perioperative complications.

ANALYSIS OF DATA

Data were analysed using a computer database and gastrointestinal symptomatology classified into the following subgroups:

- (1) Constipation predominant irritable bowel syndrome (constipation plus non-menstrual abdominal pain and distension).
- (2) Diarrhoea predominant irritable bowel syndrome (diarrhoea plus non-menstrual abdominal pain and distension).
- (3) Alternating type irritable bowel syndrome (alternating diarrhoea and constipation plus non-menstrual abdominal pain and distension).
- (4) Non-irritable bowel syndrome pain (non-menstrual abdominal pain with no disturbance in bowel habit).
- (5) Painless constipation.
- (6) Painless diarrhoea.

To be classified into the above groups, symptom frequency had to be greater than once per month.

Statistical analysis was performed using contingency table analysis with Yates's correction as appropriate. Significance was set at the 5% level. Results are expressed as group means with 95% confidence intervals (CI).

Results

A total of 205 patients completed the preoperative questionnaire and the return rates at six weeks and six months were 98% and 93% respectively.

PREOPERATIVE SYMPTOMATOLOGY

Preoperative gastrointestinal symptoms are summarised in Table I. Symptoms suggestive of irritable bowel syndrome were found in 22% of women, with the constipation predominant subtype being noted most frequently. A disturbance of bowel habit without pain was seen in a further 8% of women. Approximately half of the women in all subgroups had symptoms more frequently than once per week.

POSTOPERATIVE SYMPTOMATOLOGY

Approximately 20% of women were experi-

encing symptoms suggestive of irritable bowel syndrome six weeks and six months after hysterectomy, and in half of these symptoms occurred more than once per week (Table I). Again, the constipation predominant subtype occurred most frequently (Table I). Comparison with preoperative symptomatology showed no significant changes in the proportion of patients in the various symptom groupings with the exception that the proportion of patients with abdominal pain and no bowel disturbance (non-irritable bowel syndrome pain) had fallen by one third at six months ($p<0.01$).

CHANGES IN INDIVIDUAL SYMPTOMATOLOGY

Such an overall comparison does not take into account changes in the symptomatology of individual patients. Of the total patient group, 83 (40%) had no gastrointestinal symptoms throughout the period of study. Table II summarises the outcome at six months for patients with abdominal symptoms preoperatively. Of the 45 women with symptoms suggestive of irritable bowel syndrome preoperatively, 33% were symptom free at six months and 27% had improved, whereas 20% complained of increased symptoms. Preoperative non-irritable bowel syndrome abdominal pain had resolved completely in 63% of patients at six months.

DE NOVO SYMPTOMATOLOGY

After hysterectomy, approximately 10% of the 111 women who were asymptomatic beforehand experienced symptoms suggestive of irritable bowel syndrome more often than once per week (Table III). Constipation predominant irritable bowel syndrome was the commonest symptom complex to arise and occurred more than once per week in 9% of previously asymptomatic women at six weeks and 5% at six months. Painless constipation was noted for the first time by a further 2% of patients. Abdominal pain arising after surgery was always associated with a disturbance of bowel habit.

In view of the small numbers of patients with de novo diarrhoea and alternating bowel habit, analysis of possible associations with pre- and perioperative factors was restricted to patients with de novo constipation. The development of constipation did not seem to be associated with the type of hysterectomy, oophorectomy, the performance of a posterior repair, or the administration of perioperative antibiotics (Table IV).

RELATION BETWEEN DE NOVO BOWEL AND URINARY SYMPTOMS

No relation could be found between the development of de novo constipation and de novo urinary dysfunction after hysterectomy. Before surgery, 109 of the total of 205 patients had no bowel or urinary symptoms. Of these 109 women, only four developed both constipation and urinary symptoms (frequency (3), incontinence (1)) after surgery. However, there were six patients who experienced constipation without urinary problems and 25 with urinary problems

TABLE II Outcome of gastrointestinal symptomatology at six months in patients with symptoms before hysterectomy

	Before (no)	Resolved no (%)	Improved no (%)	Same no (%)	Worse no (%)
Total IBS:	45	15 (33)	12 (27)	9 (20)	9 (20)
IBS constipation	20	8 (40)	6 (30)	2 (10)	4 (20)
IBS diarrhoea	12	2 (17)	3 (25)	4 (33)	3 (25)
IBS alternating	13	5 (38)	3 (23)	3 (23)	2 (15)
Non-IBS pain	32	20 (63)	6 (19)	4 (13)	2 (6)
Painless constipation	12	4 (33)	2 (17)	3 (25)	3 (25)
Painless diarrhoea	3	1 (33)	0	1 (33)	1 (33)

IBS=irritable bowel syndrome.

TABLE III *Gastrointestinal symptoms arising after hysterectomy more than once per week in the 111 patients asymptomatic before surgery*

	6 Weeks % (95% CI)	6 Months % (95% CI)
Total IBS:	13 (7-20)	9 (4-16)
IBS constipation	9 (4-16)	5 (2-11)
IBS diarrhoea	2 (0-2-6)	2 (0-2-6)
IBS alternating	2 (0-2-6)	2 (0-2-6)
Non-IBS abdominal pain	0	0
Painless constipation	2 (0-2-6)	2 (0-2-6)
Painless diarrhoea	0	0

IBS=irritable bowel syndrome.

(frequency and/or urgency (18), incontinence (7)) and no constipation.

Discussion

Our results show that preoperative symptom complexes suggestive of irritable bowel syndrome are common in women about to undergo hysterectomy but resolve or improve in 60% after the operation. The strong temporal association with surgery makes it very unlikely that this surprising result is just related to the natural fluctuation of the condition. A more likely explanation is that preoperative symptoms are related to the effect of the gynaecological condition or its treatment. The resolution of 'non-irritable bowel syndrome' abdominal pain after hysterectomy in many patients suggests that this symptom was of gynaecological origin. Improvement of bowel function may have resulted from withdrawal of treatment for the gynaecological condition. The commonest indication for hysterectomy was dysfunctional bleeding and fibroids, and these patients may have received iron supplements, mefenamic acid, or oestrogens and progestogens, all of which can cause bowel dysfunction.⁷ A further explanation is that the improvement in symptoms after surgery was a manifestation of the placebo effect which is appreciable in clinical trials in irritable bowel syndrome.⁸ However, although the patients might have expected their abdominal pain to resolve after surgery, it seems less likely they would believe that bowel habit problems would be resolved by hysterectomy.

De novo gastrointestinal symptomatology occurring more than once per week was seen in 10% of the study group. Why hysterectomy should trigger the symptoms of irritable bowel syndrome in some women is unknown. It has been postulated that perioperative use of antibiotics, particularly metronidazole, may predispose to its development by causing a change in bowel flora.⁹ Approximately 60% of patients who were asymptomatic before surgery received

metronidazole perioperatively, but no association was observed between this and the development of bowel dysfunction, either six weeks or six months after surgery. A further possibility which merits consideration is that psychological factors may be of importance in development of new symptoms. Hysterectomy may be associated with the onset of anxiety and depression in some women¹⁰ and it is known that psychological disturbance is common in patients with irritable bowel syndrome,^{11 12} although community surveys suggest that psychopathology may influence whether patients present with symptoms rather than cause symptoms directly.^{13 14}

Constipation was the commonest bowel disturbance after hysterectomy but the mechanism by which hysterectomy may cause this remains speculative. The observation that bladder and bowel dysfunction may occur in the same patients¹⁵ and the finding of abnormalities in rectosigmoid motility in women with constipation after hysterectomy¹⁶ have led to the suggestion that autonomic denervation of the pelvic viscera may occur during surgery. In the present study, however, there seemed to be no correlation between the development of de novo bladder and bowel symptoms. A recent study has also failed to show abnormalities of rectosigmoid motility or rectal sensitivity in women with constipation after hysterectomy.¹⁷ Finally, although it is now accepted that the pelvic nerves may be damaged during radical hysterectomy, this seems unlikely after vaginal or abdominal hysterectomy.¹⁸

Hysterectomy could also be implicated in the development of constipation through hormonal changes after oophorectomy as a decrease in plasma oestradiol and its precursors has been reported in women with constipation.¹⁹ However, in keeping with accepted practice, most women undergoing bilateral oophorectomy in the present study were treated with hormone replacement therapy and were thus unlikely to be oestrogen deficient. It is also possible that decreased prostaglandin concentrations after hysterectomy could predispose to bowel dysfunction. Prostaglandins tend to increase bowel frequency and removal of the uterus, which is a potent source of prostaglandins, may therefore result in constipation. It has also been suggested that vaginal hysterectomy with posterior repair may specifically affect bowel function²⁰ but this could not be confirmed in this study.

In conclusion, the results of the present study show that many women with pre-existing gastrointestinal symptoms improve after hysterectomy. De novo symptomatology occurs in 10% of those asymptomatic before surgery and is most often related to constipation. As hysterectomy is a commonly performed procedure, gastroenterologists can expect to see women presenting with bowel disturbance after hysterectomy.

TABLE IV *Relation between perioperative factors and development of de novo constipation at six months*

	Total no	De novo constipation (1 > 1/week)	Ratio
Total group	111	10	11:1
Vaginal hysterectomy	51	5	10:1
Abdominal hysterectomy	60	5	12:1
Bilateral oophorectomy	9	1	9:1
Posterior repair	12	2	6:1
Perioperative antibiotics	73	4	18:1

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