

Irritable Bowel Syndrome in Women Having Diagnostic Laparoscopy or Hysterectomy

Relation to Gynecologic Features and Outcome

GEORGE F. LONGSTRETH, MD, DAVID B. PRESKILL, MD, and LEE YOUKELES, MS

We identified irritable bowel syndrome (IBS) in 47.7% of 86 women having diagnostic laparoscopy for chronic pelvic pain, 39.5% of 172 women having elective hysterectomy, and 32.0% of 172 controls age-matched for the hysterectomy group (P = NS). Constipation and pain subtype IBS were more common in hysterectomy patients than controls (P < 0.05). In laparoscopy patients, dyspareunia was more common in those with IBS than in those without it (P < 0.05). In the hysterectomy group, more IBS patients had chronic pelvic pain (P < 0.005), and abnormal menses (P < 0.01). Chronic pelvic pain was more frequently the only pre-hysterectomy diagnosis in IBS patients (P < 0.05), and IBS was present more often when pain was a reason for hysterectomy (P < 0.01). One year after laparoscopy, IBS patients gave lower overall status ratings (P < 0.01) and lower pain improvement ratings (P < 0.05) than non-IBS patients. In women who had a hysterectomy for pain, there was less pain improvement one year later in those with the pain subtype of IBS than in non-IBS patients (P < 0.05). IBS is associated with gynecologic symptoms and affects the symptomatic outcome of diagnostic laparoscopy and hysterectomy.

KEY WORDS: irritable bowel syndrome; hysterectomy; laparoscopy; pelvic pain.

Irritable bowel syndrome (IBS) is a very common functional bowel disorder characterized by abdominal pain and bowel dysfunction. Patients who seek help for IBS are more likely to be women than men in a ratio usually found to be at least 2:1 (1-3). IBS is common in British gynecology patients with abdominal pain (4). Various genitourinary symptoms are strongly associated with it (5). However, most current gynecology textbooks do not mention

IBS (6-8) or only discuss it briefly (9). A recent study found that gynecologists often fail to recognize it (4).

Pelvic laparoscopy is often performed because of chronic pelvic pain. Often no abnormality is found or the woman's symptoms are not attributed to the laparoscopic findings. In some women, hysterectomy is done for pelvic pain but does not relieve it. When such patients are referred to gastroenterologists, IBS is often diagnosed. Information is lacking on the frequency of IBS in women having diagnostic laparoscopy or hysterectomy and its relation to gynecologic symptoms, pelvic pathology and post-operative outcome.

Therefore, we identified patients with IBS and compared them to patients without IBS (regarding

Manuscript received August 30, 1989; revised manuscript received March 29, 1990; accepted April 5, 1990.

From the Departments of Medicine, and Obstetrics and Gynecology, Southern California Permanente Medical Group, San Diego; and the Department of Biomathematics, Center for the Health Sciences, University of California, Los Angeles, Los Angeles, California.

Address for reprint requests: Dr. G.F. Longstreth, 4647 Zion Avenue, San Diego, California 92120.

clinical features, pathology, and overall status and pain one year later) in individuals having laparoscopy or elective hysterectomy. We also determined the prevalence of IBS in a control group.

MATERIALS AND METHODS

The patients and physicians were in a large prepaid health maintenance organization. Ninety consecutive women having diagnostic pelvic laparoscopy for chronic pain and 175 consecutive women having routine hysterectomy were asked to participate, excluding one who could not read English and those with a history of inflammatory bowel disease (one), bowel resection (one) or peptic ulcer surgery (none). Three hysterectomy and four laparoscopy patients refused to participate. Therefore, this study involves 172 hysterectomy and 86 laparoscopy patients. We asked them to complete a questionnaire that elicited demographic and bowel function data and gynecologic symptoms. All patients identified as having IBS had alternating bowel function more than 25% of the time in addition to symptoms that allowed them to be subtyped as having constipation (≤ 2 bowel movements per week or straining at stool for $>25\%$ of the time), diarrhea (>21 bowel movements per week or loose/watery stools $>25\%$ of the time) or abdominal pain (10, 11). Classification in the pain subtype required more than six episodes in the previous year of nonmenstrual abdominal pain and three or more of the following: (1) abdominal pain relieved by bowel movement, (2) loose stools associated with the pain, (3) more frequent stools associated with the pain, (4) abdominal distension, (5) mucus in the stool, and (6) a sense of incomplete evacuation.

One year after the procedures, these hysterectomy and laparoscopy patients were mailed a follow-up questionnaire containing the same bowel function questions that had been previously asked. They rated their overall status and pain compared to before the procedure on the following scale: much worse (1), a little worse (2), unchanged (3), a little better (4), or much better (5). From a review of the hysterectomy patients' records after surgery, a gynecologist recorded the preoperative diagnoses and surgical pathology. Records of the laparoscopy patients were reviewed for the laparoscopic findings, a history of depression (as determined by referral for counseling or use of antidepressant drugs), chronic headache or chronic back pain (multiple visits or specialist referral) and whether hysterectomy had been performed during one year after laparoscopy. Eight hysterectomy patients failed to complete the one-year questionnaire. Thus, 164 posthysterectomy women were included in the follow-up analysis. Due to inability to obtain the records and/or failure to receive the follow-up questionnaires for 10 patients, complete data were obtained for 76 postlaparoscopy patients.

An age-matched control group for the hysterectomy patients was obtained by eliciting bowel function data from women undergoing a routine health appraisal examination. A history of inflammatory bowel disease, bowel resection, or peptic ulcer excluded them. All included

TABLE 1. IRRITABLE BOWEL SYNDROME SUBTYPES*

	Laparoscopy patients (N = 86)	Hysterectomy patients (N = 172)	Control patients (N = 172)
Constipation, N(%)	30 (34.9)	51 (30.0)†	33 (19.2)
Diarrhea, N(%)	15 (17.4)	19 (11.2)	24 (14.0)
Pain, N(%)	11 (12.8)	12 (7.0)†	4 (2.3)

*Categories are not exclusive.

† $P < 0.05$, hysterectomy patients vs control subjects.

women were obtaining an examination only as a routine health screening procedure. We divided the 172 hysterectomy patients into five-year age brackets and collected questionnaires until all age categories were matched with an equal number of controls.

Categorical data were compared by chi-square analysis and means of continuous variables by the two-tailed Student's *t* test or the Mann-Whitney ranks test where appropriate (overall and pain improvement scores). Significance testing for categorical data was done with Fisher's exact test when the minimum expected value for a single cell was less than five. *P* values <0.05 were regarded as statistically significant.

RESULTS

Laparoscopy Patients. The age of the 86 laparoscopy patients was 33.1 ± 1.1 years (mean \pm SEM). IBS was diagnosed in 41 of the 86 women (47.7%). Table 1 shows the distribution of IBS subtypes.

Table 2 indicates that clinical features were similar in IBS and non-IBS groups except for an increased prevalence of dyspareunia in women with IBS. There were no differences in laparoscopic diagnoses between groups.

Figure 1 shows that one year after laparoscopy, IBS patients gave only slightly less lower overall status and pain improvement ratings than non-IBS patients. After excluding the 13 women who had undergone hysterectomy, IBS patients still gave lower overall status ratings but the difference in pain status was no longer statistically significant.

At the one-year follow-up, 26 (70.3%) of the 37 women initially defined as having IBS still had IBS. Of the 39 women initially in the non-IBS group, 23 still did not have IBS (59.0%). The proportions of patients with IBS originally and one year later were similar: 37 (48.7%) vs 42 (55.3%).

Hysterectomy Patients. The age of the 172 hysterectomy patients (43.0 ± 0.7 years, mean \pm SEM) was similar to that of the 172 controls (43.3 ± 0.7 years). Similar percentages of hysterectomy patients, 39.5% (68), and controls, 32.0% (55), were diagnosed as IBS. Table 1 indicates that the consti-

IRRITABLE BOWEL SYNDROME

TABLE 2. CLINICAL FEATURES AND LAPAROSCOPIC FINDINGS*

	IBS (N = 37)	Non-IBS (N = 39)	Statistical significance
Ages (years, mean ± SEM)	32.3 ± 1.1	33.9 ± 1.5	NS
Symptoms			
Pain duration (years; mean ± SEM)	3.3 ± 0.7	3.2 ± 0.7	NS
Abnormal menstrual bleeding more than twice, N (%)	22 (59.5)	19 (48.7)	NS
Dysmenorrhea, N (%)	28 (75.7)	26 (66.7)	NS
Pelvic pain while standing, N (%)	18 (48.6)	18 (46.2)	NS
Dyspareunia, N (%)	29 (78.4)	21 (53.8)	<0.05
Depression, N (%)	10 (27.0)	11 (28.2)	NS
Chronic headache, N (%)	14 (37.8)	9 (23.1)	NS
Chronic backache, N (%)	5 (13.5)	5 (12.8)	NS
Laparoscopic findings			
Normal	12 (32.4)	15 (38.5)	NS
Adhesions	11 (29.7)	16 (41.0)	NS
Endometriosis	9 (24.3)	6 (15.4)	NS
Functional ovarian cyst	5 (13.5)	7 (17.9)	NS
Uterine fibroid	3 (8.1)	1 (2.6)	NS
Chronic pelvic inflammatory disease	1 (2.7)	2 (5.1)	NS
Neoplastic ovarian cyst	1 (2.7)	0 (0)	NS
Other	3 (8.1)	2 (5.1)	NS

*IBS = irritable bowel syndrome; non-IBS = non-irritable bowel syndrome; NS = nonsignificant.

pation and pain subtypes of IBS were more common in hysterectomy patients than in the controls.

Table 3 indicates that long-lasting or recurrent pelvic pain and abnormal menstrual bleeding were more common in hysterectomy patients with IBS than in those without it. Preoperative diagnoses were similar in both groups. Multiple diagnoses

were common. Although chronic pelvic pain was diagnosed in a similar proportion of each group, it was more often the *only* diagnosis in IBS patients than non-IBS patients (10.3% vs 2.9%, $P < 0.05$). Furthermore, the proportion of patients with IBS was significantly greater in those who stated preoperatively that they were undergoing hysterectomy for pain, 41 (60.3%), than in those who stated pain was not a reason for surgery, 38 (36.5%), $P < 0.01$. Surgical pathology results were similar in the two groups except for less frequent reporting of uterine fibroids in IBS patients. Since the percentages of patients diagnosed preoperatively with fibroids were similar in the two groups and there was similar agreement between preoperative diagnoses and pathologic findings in both groups, the decrease in fibroids found in the IBS group was of doubtful significance.

Figure 2 shows data obtained one year after hysterectomy from patients who indicated preoperatively that pain was a reason for surgery. IBS patients and non-IBS patients gave very high and similar ratings, but in IBS patients there was a trend toward a lower pain improvement rating that did not reach statistical significance ($P = 0.06$). When only IBS patients with the pain subtype were compared with non-IBS patients, a small but statistically significant lower pain rating was found.

At the one-year follow-up, bowel function data were incomplete on one IBS patient, leaving 63 IBS

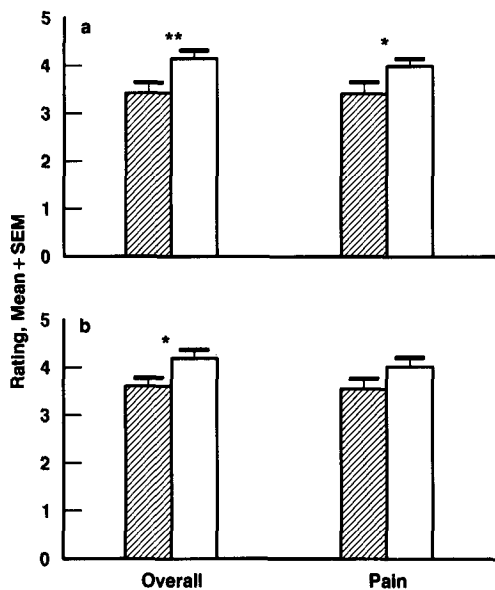


Fig 1. Self-ratings for overall status and pain at one year by all laparoscopy patients (a) and by those who had not undergone hysterectomy (b). Hatched bars depict IBS patients ($N = 37$ in (a) and $N = 33$ in (b)). Open bars depict non-IBS patients ($N = 39$ in (a) and $N = 30$ in (b)). * $P < 0.05$; ** $P < 0.01$.

TABLE 3. CLINICAL FEATURES AND PATHOLOGIC FINDINGS*

	IBS (N = 68)	Non-IBS (N = 104)	Statistical significance
Age (years; mean \pm SEM)	41.4 \pm 1.2	44.0 \pm 0.9	NS
Gynecologic history			
Long-lasting or recurrent pelvic pain, N (%)	48 (70.6)	50 (48.5)	<0.005
Abnormal menstrual bleeding more than twice	53 (79.1)	59 (59.0)	<0.01
Preoperative diagnosis			
Uterine fibroids, N (%)	29 (42.6)	57 (54.8)	NS
Dysfunctional bleeding, N (%)	26 (38.2)	43 (41.3)	NS
Chronic pelvic pain, N (%)	20 (29.4)	20 (19.2)	NS
Dysmenorrhea, N (%)	19 (27.9)	19 (18.3)	NS
Dyspareunia, N (%)	10 (6.8)	9 (8.7)	NS
Pain while standing, N (%)	15 (22.1)	12 (11.5)	NS
Malignancy/Premalignancy, N (%)	9 (13.2)	13 (12.5)	NS
Endometriosis, N (%)	8 (11.8)	6 (5.8)	NS
Pelvic relaxation, N (%)	7 (10.3)	4 (3.8)	NS
Benign ovarian disease, N (%)	3 (4.4)	6 (5.8)	NS
Pelvic inflammatory disease, N (%)	1 (1.5)	0 (0)	NS
Other, N (%)	3 (4.4)	4 (3.8)	NS
Surgical pathology			
Uterine fibroids	39 (57.4)	78 (75.0)	<0.05
Adhesions, N (%)	26 (38.2)	33 (31.7)	NS
Endometriosis, N (%)	15 (22.1)	23 (22.1)	NS
Uterine adenomyosis, N (%)	16 (23.5)	20 (19.2)	NS
Malignancy/Premalignancy, N (%)	7 (10.3)	8 (7.7)	NS
Benign ovarian disease, N (%)	6 (8.8)	9 (8.7)	NS
Pelvic inflammatory disease, N (%)	5 (7.4)	6 (5.8)	NS
Normal, N (%)	7 (10.3)	4 (3.8)	NS

*IBS = irritable bowel syndrome; non-IBS = non-irritable bowel syndrome; NS = nonsignificant.

patients to compare with 100 non-IBS patients. In the 63 women initially defined as having IBS, 35 (55.6%) still had IBS. In the 100 women initially in

the non-IBS group, 80 (80.0%) still did not have IBS. The proportions of patients with IBS originally and one year later were similar 63 (38.6%) vs 55 (33.7%).

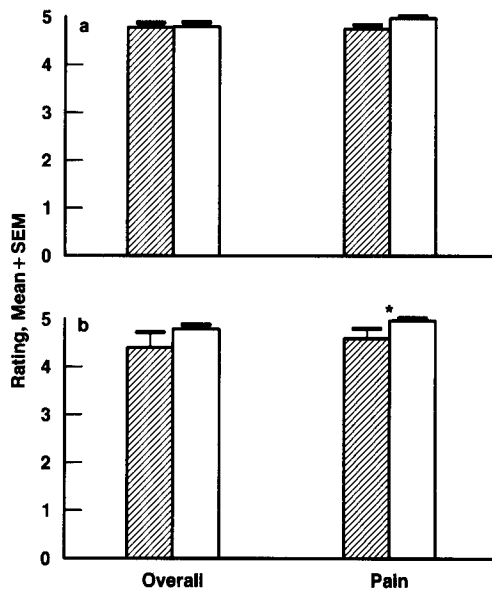


Fig 2. Self-ratings for overall status and pain at one year by patients who underwent hysterectomy for pain. Hatched bars depict all IBS patients in (a) where $N = 37$ and IBS patients with the pain subtype in (b) where $N = 10$. Open bars depict non-IBS patients ($N = 34$). * $P < 0.05$.

DISCUSSION

Certain symptoms are so typical of IBS that the history alone usually distinguishes it from organic disease (12, 13). The characteristic symptoms of abdominal pain, disturbed defecation, and bloatedness were the basis of the self-administered questionnaire used to identify IBS (10, 11). We found IBS in a large proportion of women undergoing diagnostic laparoscopy for chronic pelvic pain or elective hysterectomy. Although control subjects did not differ significantly from the hysterectomy patients in the proportion with IBS of all types, the constipation and pain subtypes were more common in the patients. Using the same symptom criteria, Drossman and coworkers found IBS in lower percentages of people, 17% (10) and 15% (11), who were not seeking health care; however, his subjects were younger than those in our study groups. Data on the prevalence of IBS at various ages are lacking. The ages of Drossman's subjects were clustered in the lower part of the range (20–50 years of

IRRITABLE BOWEL SYNDROME

age) at which most patients consult physicians (1–3), whereas the mean ages of those in our study groups were about 10 and 20 years older. His subjects also were of both sexes. Since females usually predominate both in people with IBS who do not seek medical help (10) and in those who consult physicians for it (1–3), a higher prevalence in our all-female groups would be expected.

Although many women with IBS in both the hysterectomy and laparoscopy groups did not have it one year later, many of the initial non-IBS subjects later manifested the disorder. Therefore, neither procedure affected the proportion of women with IBS. In view of the intermittent nature of IBS (14), change over time is expected.

Why is IBS so common in these patients? The most important factors are probably chronic illness behavior, the association of noncolonic symptoms with IBS, and the similarity of pain of bowel and gynecologic origin. Patients with IBS are physically healthy but manifest chronic illness behavior (1, 5, 15). They are more likely than the general population to have multiple somatic complaints, to consider minor illnesses to be more serious, and to visit a physician for them. They are more often hospitalized for acute illnesses and have more abdominal surgery than people without IBS (1, 15). We examined only a few types of noncolonic pain that could be part of chronic illness behavior. No difference was found between laparoscopy groups regarding dysmenorrhea, pelvic pain while standing, headache, or backache; however, dyspareunia was more common in the IBS patients.

An important observation in our study was the association of gynecologic symptoms with IBS. Various noncolonic symptoms have been associated with IBS (5). Abnormal menstrual bleeding was more common in hysterectomy patients with IBS, an association previously unreported, and possibly a manifestation of chronic illness behavior. The prevalence of dyspareunia in laparoscopy patients with IBS was nearly twice the reported rate (5). However, its statistical significance at only the 5% level could reflect a type 1 error due to the large number of univariates evaluated.

The pain of IBS is most often in the lower abdomen or pelvis (1–3). In hysterectomy patients, chronic pelvic pain was frequently associated with IBS and was more often the only preoperative diagnosis when IBS was present. Also, IBS was associated with the patients' impression that pain was a reason for hysterectomy. Pelvic pain typical

of gynecologic origin was not more common in patients without IBS than in those with IBS. Dyspareunia was more frequent in laparoscopy patients with IBS. These findings emphasize the difficulty in distinguishing pain of gynecologic and bowel origin.

IBS had an effect on patients' self-assessment of outcome after both procedures. At one year, patients with IBS in the laparoscopy group reported less improvement in their pain and overall status. The lower pain improvement ratings appeared to be influenced by hysterectomy during the first year after laparoscopy. We did not assess whether expected postoperative pain contributed to this finding. The self-assessment ratings for pain and overall status at one year in the hysterectomy group were very high in women with or without IBS. Only when those with pain subtype IBS were compared with those without IBS was a small decrease in pain improvement found. Differences in gynecologic pathology that could explain the data are not evident. As noted in other studies of diagnostic laparoscopy, findings were often normal or consisted only of adhesions (16–19), which have a controversial role in the genesis of chronic pelvic pain (20). In contrast, Prior and Whorwell found much less pelvic pathology in gynecology patients with IBS than in those without it. Their IBS patients also had less pain relief at one-year follow up (4), but only a few of them underwent hysterectomy, and the number who had laparoscopy was not reported. We suspect IBS-associated illness behavior contributed to our patients' outcome differences in overall status and pain ratings.

The association of gynecologic symptoms with IBS and the similarity of pain of bowel and gynecologic origin can make the problem of determining the cause of women's symptoms more difficult. Even in cases with proven pelvic pathology, IBS can influence the symptoms and postoperative outcome. Preoccupation with illness, part of the chronic illness behavior typical of IBS, may be a major factor. Gastroenterologists and gynecologists should collaborate in the care of women with pelvic pain and bowel dysfunction.

REFERENCES

1. Chaudhary NA, Truelove SC: The irritable colon syndrome. A study of the clinical features, predisposing causes and prognosis in 130 cases. *Q J Med* 31:307–322, 1962
2. Goulston K: Clinical diagnosis of the irritable colon syndrome. *Med J Aust* 1:1122–1125, 1972

3. Fielding JF: The irritable bowel syndrome. Part I: Clinical spectrum. *Clin Gastroenterol* 6:607-622, 1977
4. Prior A, Whorwell PJ: Gynaecological consultation in patients with the irritable bowel syndrome. *Gut* 30:996-998, 1989
5. Whorwell PH, McCallum M, Creed FH, Roberts CT: Non-colonic features of irritable bowel syndrome. *Gut* 27:37-40, 1986
6. Jones III HW, Wentz AC, Burnett LS: *Novak's Textbook of Gynecology*, 11th ed. Baltimore, Williams & Wilkins, 1988
7. Willson JR, Carrington ER, Ledger WJ: *Obstetrics and Gynecology*, 8th ed. St. Louis, CV Mosby, 1987
8. Kase NG, Weingold, AB, Lucas WE, Connell EB: *Principles and Practice of Clinical Gynecology*. New York, John Wiley & Sons, 1983
9. Stander RW: Pain. In *Gynecology and Obstetrics. The Health Care of Women*, 2nd ed. SL Romney, MJ Grey, AB Little, JA Merrill, EJ Quilligan, RW Stander (eds). New York, McGraw-Hill Book Company, 1981, pp 481-491
10. Drossman DA, Sandler RS, McKee DC, Lovitz AJ: Bowel patterns among subjects not seeking health care. Use of a questionnaire to identify a population with bowel dysfunction. *Gastroenterology* 83:529-534, 1982
11. Sandler RS, Drossman DA, Nathan HP, McKee DC: Symptom complaints and health care seeking behavior in subjects with bowel dysfunction. *Gastroenterology* 87:314-318, 1984
12. Thompson WG, Heaton KW: Functional bowel disorders in apparently healthy people. *Gastroenterology* 79:283-288, 1980
13. Manning AP, Thompson WG, Heaton KW, Morris AF: Towards positive diagnosis of the irritable bowel. *Br Med J* 2:653-654, 1978
14. Waller SL, Misiewicz JJ: Prognosis in the irritable bowel syndrome: A prospective study. *Lancet* 2:753-756, 1969
15. Whitehead WE, Winget C, Fedoravicius AS, Wooley S, Blackwell B: Learned illness behavior in patients with irritable bowel syndrome and peptic ulcer. *Dig Dis Sci* 27:202-208, 1982
16. Rosenthal RH, Ling FW, Rosenthal TL, McNeeley SG: Chronic pelvic pain: Psychological features and laparoscopic findings. *Psychosomatics* 25:833-841, 1984
17. Levitan Z, Eibschitz I, de Vries K, Hakim M, Sharf M: The value of laparoscopy in women with chronic pelvic pain and a "normal pelvis." *Int J Gynaecol Obstet* 23:71-74, 1985
18. Rapkin AJ, Kames LD: The pain management approach to chronic pelvic pain. *J Reprod Med* 32:323-327, 1987
19. Lundberg WI, Wall JE, Mathers JE: Laparoscopy in the evaluation of pelvic pain. *Obstet Gynecol* 42:872-876, 1973
20. Rapkin AJ: Adhesions and pelvic pain: A retrospective study. *Obstet Gynecol* 68:13-15, 1986