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Bowel function and irritable bowel symptoms after hysterectomy and cholecystectomy – a population based study

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Abstract

Because unsubstantiated beliefs link hysterectomy and cholecystectomy with bowel function, this study examined all the women who had had these operations in a defined population (79 and 37 respectively, out of 1058) with respect to bowel habits, irritable bowel syndrome symptoms, and whole gut transit time calculated from records of three defecations. Compared with unoperated controls, women after hysterectomy were more likely to consider themselves constipated; they also strained more and admitted more often to bloating and feelings of incomplete evacuation. Their stools tended to be lumpier and, in women over 50 years, transit time was longer. When women treated by cholecystectomy were compared with women having newly discovered, asymptomatic gall stones, they more often described defecation as urgent but had no other detectable differences. In conclusion symptomatic constipation is frequent in women after hysterectomy; after cholecystectomy, bowel habit is not consistently changed but the rectum seems to be more irritable.

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There is a widespread but poorly substantiated belief that hysterectomy is associated with bowel problems, especially constipation and irritable bowel syndrome. In published series of patients with constipation[1] and irritable bowel syndrome or functional abdominal pain[2–4] there is an excess of women who have had a hysterectomy but this may be because women who are referred to hospital with these disorders tend to be anxious and polysymptomatic.[5–7] This could also be because women with unexplained lower abdominal pain are often referred in the first instance to gynaecologists,[8 9] who may not consider an intestinal cause until they have removed the pelvic organs.[10]

Associations between diseases can be established only by population based studies. In the one such study reported, 91 women who had had a hysterectomy were more likely than age matched controls to report infrequent defecation and to have consulted a doctor for constipation.[11] This study lacked objective or prospective data and was biased by the exclusion from the controls of people with irritable bowel syndrome. The findings conflict with those of Prior *et al*[12] who studied 205 women before and after hysterectomy. Six months after the operation, constipation (defined as <3 stools/wk or frequent straining) had gone away more often than it had developed (12 *v* 7 women respectively) and the prevalence of irritable bowel syndrome was unchanged. Thus the present situation is confused. Existing reports have depended on self reported defecation frequency, which is prone to error[13] and on reports of straining at stool, which is unreliable because it is a symptom of irritable bowel syndrome as well as of constipation.[14] An exception is a study of whole gut transit time in 26 women before and six months after hysterectomy; there was no systematic change.[15]

Diarrhoea after cholecystectomy is a well recognised entity but is usually considered to be rather rare and to be caused sometimes by bile acid malabsorption of obscure origin.[16 17] Its prevalence is unknown except that, in a retrospective analysis two years after cholecystectomy, eight of 93 patients were said to have loose stools and bouts of watery diarrhoea.[18]

The aims of this study were to find out if the prevalence of bowel dysfunction is indeed increased in women after hysterectomy and those treated by cholecystectomy, using a random sample of the population and prospectively recorded data as well as questionnaire responses.

Subjects and methods

The subjects of this study were 1058 women aged 25–69 who, between October 1987 and March 1989, attended a survey in East Bristol concerned with gall stones, bowel function, and abdominal symptoms in the general population. They were the 70·2% of a stratified random sample of women in this age group who accepted an invitation to have ultrasonography of the gall bladder and to answer questions about bowel function, etc. Two of the questions concerned cholecystectomy and hysterectomy. All those who said they had had the first operation had an appropriate scar and an absent gall bladder on ultrasonography. A history of hysterectomy was accepted without further checks. Thirty seven women (aged 25–68, mean 47 and median 48) had had cholecystectomy and 79 (aged 29–68, mean 50 and median 50) had had hysterectomy, seven of whom had had both operations. The time elapsed since the operations was: cholecystectomy 3 months to 26 years, mean 7 years; hysterectomy 4 months to 31 years, mean 11 years. To determine the effect of cholecystectomy, the women who had had this operation were compared with the women who were discovered on ultrasonography to have gall stones (n=48, aged 25 to 67, mean 45), all but three of whom were asymptomatic.[19] Similar controls could not be identified for the women who had

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had hysterectomy, so comparison was made with all the women who had an intact uterus and an intact gall bladder (n=950, including 41 with asymptomatic gall stones).

Comparisons were made of the following indices of bowel function: stated frequency of defecation per week, mean interval between recorded defecations, a score for stool form, and calculated whole gut transit time. The last three were taken from forms on which subjects recorded three consecutive defecations, this being done satisfactorily by 77% of the subjects.[13] On these forms, subjects recorded the date and time of each defecation and whether or not they strained (held their breath and pushed) to start defecating and whether or not they strained to finish. They also graded each stool on a 6 point scale sensitive to intestinal transit time[20] (Table I). For each subject a stool form score was calculated by simple addition of their three gradings, giving a range from 3 (consistently constipated) to 18 (consistently loose). Whole gut transit time was calculated from the following equation: Whole gut transit time (h)=103−1·23(DF)−4·69(SFS)+0·638(IDTI) where DF is stated defecation frequency, SFS is stool form score, and IDTI is the mean interdefecatory time interval in hours from the bowel record form. Transit time calculated in this way correlates well (r=0·74) with mean transit time measured directly using multiply shaped radio opaque pellets and stool radiography (Probert C J, Emmett P M, Heaton K W, unpublished data).

A questionnaire[21] was used to discover the presence and frequency of seven irritable bowel symptoms: recurrent intestinal pain, abdominal bloating, feelings of incomplete evacuation, passage of mucus, straining to finish defecating, urgency of defecation, and passing runny stools (information on the last two was unavailable in 17% of subjects). The first four symptoms encompass the six Manning criteria for diagnosing irritable bowel syndrome.[22] For this study recurrent intestinal pain was defined as abdominal pain that had occurred on more than six days in the past year and was relieved by defecation or whose onset was associated with more frequent or looser stools. Other symptoms were deemed to be present if they occurred on at least a quarter of the days or occasions, except that passage of mucus was taken as a symptom if it had ever occurred (this being normal clinical practice). The number of symptoms was computed for each subject and the groups were compared for the proportion having ≥1 and ≥2 symptoms. The prevalence of these symptoms in the whole population has already been published.[21]

Subjects were asked if they considered they were ever constipated. Possible answers were never, occasionally, quarter to half of the time, usually, or always. They were also asked if they had ever consulted a doctor about recurrent bowel symptoms or abdominal pain.

Analysis of variance, *t* tests, Mann-Whitney tests, and χ^2 tests were used as appropriate.

In this population, bowel function and transit time are different in women of childbearing age (25–49) and older women, with a greater tendency to constipation in the first.[13] Therefore, comparisons of bowel function and transit time were made separately in the two age groups. This was not necessary with irritable bowel syndrome symptoms as their prevalence does not change with age in this population.[21]

Results

HYSTERECTOMY

Women who had had a hysterectomy tended to defecate less often than the uterus intact controls. Mean values were not significantly different (Table I) but the older women who had had the operation were more likely than their controls to report <5 defecations per week (27% *v* 9%, p<0·01) and also more likely to report <3 defecations per week (11% *v* 2%, p<0·025). Stool form score tended to be lower – that is, more constipated (Table I). Again this was not significant; however, estimated intestinal transit time was significantly longer in the older women who had a hysterectomy and tended that way in the younger ones (Table I).

Self reported constipation for at least a quarter of the time was more common in women who had had hysterectomies than controls (at 25–49 years, 20% *v* 9%, NS; at 50–69 years, 22% *v* 8%, p<0·025). Operated subjects also recorded more episodes of straining on their bowel record forms. Straining to start with all three defecations was recorded by 24·7% *v* 12·4% of controls (p<0·01), and straining to finish by 12·3% *v* 4·1% of controls (p<0·01).

Women who had had a hysterectomy had an increased prevalence of bloating, incomplete evacuation, and straining to finish, but no difference with respect to pain, mucus, urgency or runny stools (Table II). Overall, they had more irritable bowel syndrome symptoms (p<0·002).

The proportion of women with ≥1, ≥2, or ≥3 symptoms who had reported these to their general practitioner was not significantly different in those with hysterectomy and those without.

CHOLECYSTECTOMY

Compared with women with gall stones, women with cholecystectomy showed no difference in frequency of defecation, stool form score or estimated intestinal transit time (Table III). With respect to symptoms they were much more likely to have urgency of defecation, 44% having this symptom. With all the other symptoms there was no difference (Table II). Compared with all the women with the gall bladder present and an intact uterus, that is the same control

TABLE I *Indices of bowel function in four groups of women in a stratified random sample of the population, all having their gall bladder present and some having had hysterectomy (mean, SD)*

	Age 25–49 (y)		*Age 50–69 (y)*	
	Uterus intact (n=778)	*Hysterectomy (n=35)*	*Uterus intact (n=172)*	*Hysterectomy (n=36)*
Stated frequency of defecation/week	7·5 (3·9)	6·9 (3·1)	7·7 (3·5)	7·3 (4·9)*
Mean interval between defecations (h)†	27 (19)	27 (10)	24 (10)	33 (23)
Median	24	24	24	24
Stool form score (range 3 to 18)†	10·1 (3·2)	9·1 (3·6)	10·6 (3·1)	9·9 (2·6)
Estimated transit time (h)†	64 (23)	69 (22)	59 (19)	70 (27)‡

*Data on frequency of defecation missing in one woman; †data from the 857 women who provided usable, valid bowel record forms (648, 28, 149, and 32 in each of the four groups respectively); ‡p=0·01 *v* uterus intact.

TABLE II *Prevalence (%) of individual irritable bowel symptoms and of having ≥1 or ≥2 symptoms in a stratified random sample of women aged 25–69*

	Cholecystectomy (n=37)	*Gall stones (n=48)*	*Hysterectomy (gall bladder present) (n=72)*	*Intact uterus (gall bladder present) (n=950)*
Recurrent intestinal pain (see Methods)	8 (22)	8 (17)	15 (21)	124 (13)
Bloating	8 (22)	6 (13)	19 (26)*	130 (14)
Incomplete evacuation†	10 (27)	8 (17)	19 (27)‡	112 (12)
Passage of mucus†	7 (19)	6 (13)	6 (9)	151 (16)
Straining to finish†	3 (8)	1 (2)	10 (14)‡	40 (4)
Urgency of defecation§	14 (44)‖	2 (6)	5 (9)	101 (13)
Runny stools§	3 (9)	1 (3)	1 (2)	18 (2)
≥1 symptoms¶	19 (51)	15 (31)	38 (53)†	341 (36)
≥2 symptoms¶	11 (30)	7 (15)	19 (26)†	135 (14)

*v intact uterus, $p<0.01$; †data available in 71 women with hysterectomy; ‡v intact uterus, $p<0.001$; §in the 83% of subjects who provided data on all symptoms; ‖v gall stones, $p<0.001$; ¶using only the first five symptoms, for which all subjects provided data.

group as used for the women with hysterectomy, women who had had cholecystectomy were no different with respect to all four indices of bowel function; for example their estimated transit time was 64 (SD 27) hours v 63 (SD 23) hours. With respect to symptoms they were again much more likely to have urgency of defecation (44% v 13%, $p<0.001$). They were also more prone to feelings of incomplete evacuation (27% v 12%, $p<0.025$).

The survey included 838 men aged 40–69. Among them were 14 men with cholecystectomy and 44 with gall stones; these did not differ significantly with respect to any of the measurements made in this study. This was also true if the men with cholecystectomy were compared with the 780 men with normal gall bladders.

There were two women with cholecystectomy who reported frequent urgency and had objective evidence of diarrhoea in that their estimated intestinal transit times were 20 and 18 hours. Neither had consulted a doctor about bowel problems.

Discussion

HYSTERECTOMY

In this population women who had had hysterectomy were more constipated than women with an intact uterus assessed by several criteria: more infrequency of defecation and slower transit time (in older women), more straining at stool by both report and record, and a greater tendency to regard themselves as constipated. We suggest, therefore, that there is a real change of colorectal function in women who have had hysterectomy and that there is objective evidence for this in older women. Prior *et al*[15] found no change in transit time after hysterectomy. Nearly all their women, however, were aged under 50 and, in our study, it was women over 50 who had significant differences. Possible explanations for a difference between older and younger women are that the operation has a delayed effect, that the operative technique has changed over the years so that it is less likely to affect bowel function, or that gynaecologists are doing fewer operations on women with pelvic pain of intestinal origin.

The data do not prove that the operation precedes the bowel dysfunction, and it is possible that women who are troubled by the symptoms of constipation are more likely to report gynaecological symptoms to their general practitioners. The women with hysterectomy, however, who had bowel symptoms were no more likely to have reported them to their doctors than other women. If hysterectomy does change bowel function it seems likely from our data that the primary problem is in the act of defecation rather than in colonic function, as there was little or no change in stool form yet half the subjects felt they were prone to constipation and a quarter strained with every recorded defecation.

If the diagnosis of irritable bowel syndrome requires the presence of abdominal pain (as recently recommended)[23] then our data show no increased tendency to irritable bowel syndrome in women after hysterectomy. In this we agree with Prior *et al*.[12] There was a trend towards more intestinal pain in the women with hysterectomy and this might have become significant with larger numbers of subjects. There was a definite increase in some abdominal symptoms, namely bloating, incomplete evacuation, and straining to finish, but all these symptoms occur with constipation as well as irritable bowel syndrome.[14 24]

A limitation of this study is that we had no information on the type of hysterectomy – abdominal or vaginal. There is evidence, however, that the two operations do not differ in their effects on bowel function.[12]

TABLE III *Indices of bowel function in the women in a stratified random sample of the population who had had cholecystectomy or had gall stones in an intact gall bladder (mean, SD)*

	Cholecystectomy (n=37)	*Gall stones (n=48)*
Stated frequency of defecation/week*	8·3 (5·4)	7·9 (4·3)
Mean interval between defecations (h)†	30 (19)	28 (20)
Median	24	24
Stool form score (range 3 to 18)†	10·4 (3·9)	10·1 (3·0)
Estimated transit time (h)†	64 (27)	64 (27)

*Data missing in one woman with gall stones; †data from the 68 women who provided usable, valid bowel record forms (28 and 40 respectively in the two groups).

CHOLECYSTECTOMY

Our failure to find a difference between cholecystectomy and gall stone subjects could, in theory, be because a high proportion of the second group had a non-functioning gall bladder as, from the physiological standpoint, a non-functional gall bladder is equivalent to cholecystectomy. This is an unlikely explanation, however, because, in the population, most people with gall stones have functioning gall bladders.[25]

Our study indicates that there is no systematic change in colonic function after cholecystectomy. Urgency of defecation is excessively common, at least in women, and there is a tendency to more feelings of incomplete evacuation, suggesting that the rectum is more sensitive or irritable. This is not easily explained. There is increased bacterial degradation of bile salts after cholecystectomy[26 27] and the main degraded bile salt, deoxycholate, induces urgent defecation if it is instilled into the rectum.[28] The relevance of this is uncertain, however, as aqueous phase concentrations of dihydroxy bile acids are

not raised in the rectum of patients with post-cholecystectomy diarrhoea.[17]

This study suggests that, if it exists, cholecystectomy induced diarrhoea is rare. We found two women (6%) who had rapid transit time and could be considered as having clinical diarrhoea but neither had consulted a doctor about it and we do not know when their diarrhoea began in relation to their operation. In any case, the prevalence of chronic functional diarrhoea in the population is about 4%.[29,30] A large prospective study is needed to establish whether and how often cholecystectomy causes diarrhoea and whether men and women react differently to the operation.

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