

Analysis of Illness Behavior in Patients After “Failed” Antireflux Surgery

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Hypothesis: Patients complaining of problems after antireflux surgery may have differences in illness behavior that could influence the decision to perform a revision procedure or its outcome.

Design: A prospective comparative questionnaire survey of consecutive series of patients.

Setting: University teaching hospital.

Patients: Those undergoing esophageal pH and manometric studies from July 1, 2001, through July 1, 2004, for investigation of new or recurrent symptoms after previous antireflux surgery. There were 52 eligible patients, of whom 4 were excluded because of refusal to enter the study (n=1) or communication difficulties (n=3). Of the remaining 48 patients, 22 underwent revision surgery and 26 did not. These 2 groups were compared with 167 patients with primary gastroesophageal reflux disease investigated during the same period.

Intervention: Self-administered, validated illness be-

havior questionnaire completed after informed consent was obtained.

Main Outcome Measures: Illness behavior categories derived from the questionnaire answers: general hypochondriasis, disease conviction, psychological vs somatic illness perception, affective inhibition, affective disturbance, denial, irritability, Whiteley index of hypochondriasis, affective state, and disease affirmation.

Results: There were no significant differences in illness behavior category scores between the 2 groups with postoperative problems and patients with primary gastroesophageal reflux disease.

Conclusion: Patients with problems after antireflux surgery have an illness behavior profile similar to that in patients with primary gastroesophageal reflux disease irrespective of whether there is objective evidence of recurrent reflux disease.

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DURING THE PAST DECADE, laparoscopic fundoplication has become the standard approach to antireflux surgery.^{1,2} This technique is associated with high levels of symptom control, patient satisfaction, and improved quality of life.³⁻⁵ After surgery, some patients develop recurrent symptoms because of wrap disruption or migration or hiatal disruption.^{6,7} Others are dissatisfied with the operation for reasons that are not always clear. Exactly what constitutes a failed antireflux procedure is a matter of debate.⁸ Surgeons typically consider a recurrence or persistence of preoperative reflux symptoms, or the postoperative development of new problems such as dysphagia, a failure.⁸ Revision antireflux surgery can be performed safely, but at the cost of higher morbidity and mortality than a primary operation; therefore, careful patient selection is important.^{6,7}

Psychological factors contribute to the symptoms of gastroesophageal reflux disease.⁹ Preoperative illness behavior may influence the outcome of certain types of surgical procedures,¹⁰ including laparoscopic Nissen fundoplication.¹¹ Major depressive illness may adversely affect the outcome of this operation.¹² In this study, we aimed to compare the illness behavior of patients undergoing reinvestigation for problems after antireflux surgery with those undergoing investigation for primary gastroesophageal reflux disease (controls) to determine whether differences in illness behavior might be used to assist in patient selection for revision surgery.

METHODS

From July 1, 2001, through July 1, 2004, we identified 52 patients undergoing esophageal pH and manometric testing at the Royal Ad-

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Table 1. Description of Attributes Measured by the Illness Behavior Questionnaire

Category	Description	Score Range
Illness Behavior		
General hypochondriasis	Phobic concern about state of health	0-9
Disease conviction	Preoccupation that a physical disease exists	0-6
Psychological vs somatic perception of illness	A sense that the illness is psychological in origin	0-5
Affective inhibition	Difficulty expressing personal feelings	0-5
Affective disturbance	Feeling anxious or sad	0-5
Denial	Denial of stress as a contributing factor in the current disease	0-5
Irritability	The presence of feelings of anger	0-6
Second-Order Factors		
Whiteley index of hypochondriasis	A general measure of phobic behavior	0-14
Affective state	Second-order factor derived from adding general hypochondriasis, affective disturbance, and irritability	0-20
Disease affirmation	Second-order factor derived from adding disease conviction to psychological vs somatic perception (5 minus psychological vs somatic perception)	0-11

elaide Hospital who were undergoing reinvestigation for new or recurrent symptoms after previous antireflux surgery. They were given an illness behavior questionnaire to complete after informed consent was obtained. Of these 52 eligible patients, 4 were excluded because of refusal to enter the study (n=1) or communication difficulties (n=3). Of the remaining 48 patients with postoperative problems, 22 (46%) were selected for revision surgery (designated the *revision group*), and 26 patients (54%) had their condition managed conservatively (the *no revision group*). These 2 groups were compared with 167 patients with primary gastroesophageal reflux disease investigated during the same period who subsequently underwent laparoscopic fundoplication.

The illness behavior questionnaire previously had been used in patients with gastroesophageal reflux disease.^{3,11} It comprised 62 questions that are answered in the affirmative or negative. Depending on the answers to specific questions, 7 categories of illness behavior have been described (**Table 1**). They have been validated in groups of patients attending psychiatric and chronic pain clinics in hospital and general practice settings.¹³ In addition, a more general measure of phobic behavior, the Whiteley index of hypochondriasis, was produced from the answers to 14 of the 62 questions. This factor has been designed to differentiate psychiatric patients with hypochondriasis from those without. Two further second-order factors derived from other scores, affective state and disease affirmation, provided additional measures of general aspects of illness behavior (Table 1). Not all of the questions contributed to the illness behavior scores, so it was not necessary for a patient to answer every question.

Data were analyzed using software (SPSS version 10; SPSS Inc, Chicago, Ill) on a personal computer (Macintosh; Apple Computers, Cupertino, Calif). Categorical data and nonparametric distributions of results from the groups with revision, no revision, and primary reflux were compared using χ^2 and Kruskal-Wallis tests, respectively. $P < .05$ was considered statistically significant.

RESULTS

Table 2 shows the clinical characteristics of the 3 groups of patients. There was no significant difference in age, sex, weight, or percentage of propagated esophageal primary peristaltic waves between the 3 groups. There was a significant difference in duration of symptoms, lower

esophageal resting pressure, gastroesophageal junction nadir pressure, number of reflux episodes per 24 hours, and total percentage of time esophageal pH was less than 4.0 between the 3 groups.

Of 215 patients, 173 (80.5%) answered all 62 illness behavior questions. One or more questions were either unanswered or answered ambiguously by 42 patients (19.5%). If such an answer affected an illness behavior category score, the answer was excluded from statistical analysis. The number of valid scores obtained for each illness behavior category is shown in **Table 3**. When illness behavior categories were compared, no statistically significant differences were identified among the 3 groups.

COMMENT

Psychological and emotional disorders are recognized associated factors in the cause of gastroesophageal reflux symptoms^{9,14} whether or not there is objective evidence of disease.^{15,16} These conditions also can influence the results of surgical treatment; for example, patients with psychological, emotional, and depressive illness have a poorer outcome and lower satisfaction than do control patients after primary laparoscopic antireflux surgery.^{12,17,18} We previously showed that high preoperative and postoperative illness behavior scores related to affect and hypochondriasis were associated with poor outcome and patient satisfaction after laparoscopic Nissen fundoplication.¹¹ There is also evidence that the outcome of laparoscopic antireflux surgery for stress-related gastroesophageal reflux disease may be enhanced by preoperative psychological intervention.¹⁹

In the present study, we found no significant difference in illness behavior in patients with problems after previous antireflux surgery, regardless of whether they underwent revision surgery, compared with that in a group with primary gastroesophageal reflux disease. This observation is reassuring because the failure of a previous surgical intervention may have led to an adverse effect on illness behavior. Although successful antireflux surgery is associated with high levels of patient satisfaction

Table 2. Clinical Characteristics of the Groups With Postoperative Problems Compared With Those in Patients With Primary Gastroesophageal Reflux Disease*

Clinical Feature	Postoperative Problems			P Value†
	Revision (n = 22)	No Revision (n = 26)	Primary Reflux (n = 167)	
Age, y	52.0 (20.0-66.0)	52.0 (15.0-79.0)	51.0 (16.0-81.0)	.93
Male-female ratio	11:11	9:17	87:80	.23
Weight, kg	73.0 (49.0-113.0)	79.0 (55.0-160)	84.0 (43.0-155.0)	.07
Duration of symptoms, y	5.5 (0-40.0)	1.8 (0-30.0)	5.0 (0-50.0)	.006
Esophageal primary peristalsis, %	100.0 (0-100.0)	95.0 (0-100.0)	100.0 (0-100.0)	.57
Lower esophageal resting pressure, mm Hg	13.5 (0-41.0)	10.5 (0-45.0)	9.0 (0-45.0)	.01
Gastroesophageal junction nadir pressure, mm Hg	6.0 (0-16.0)	4.0 (0-15.0)	0 (0-32.0)	<.001
No. of reflux episodes per 24 h	24.5 (0-275.0)	18.5 (0-143.0)	52.0 (3.0-276.0)	<.001
Total time esophageal pH less than 4.0 per 24 h, %	8.8 (0-49.0)	0.7 (0-14.3)	9.1 (0.1-53.0)	<.001

*Data are given as median (range), except for the male-female ratio, which is given as number of patients of each sex.

†P values were calculated using the Kruskal-Wallis test, except for the male-female ratio, which was calculated using the χ^2 test.

Table 3. Illness Behavior Scores in the Groups With Postoperative Problems Compared With Those in Patients With Primary Gastroesophageal Reflux Disease*

Category	No. of Patients	Postoperative Problems			No. of Patients	Primary Reflux	P Value†
		Revision	No Revision	No Revision			
Illness Behavior							
General hypochondriasis	21	1.0 (0-4.0)	25	0 (0-2.0)	163	0 (0-8.0)	.17
Disease conviction	21	3.0 (1.0-6.0)	26	2.0 (0-6.0)	160	3.0 (0-6.0)	.62
Psychological vs somatic perception	20	1.0 (0-3.0)	24	1.0 (0-3.0)	163	1.0 (0-4.0)	.62
Affective inhibition	21	2.0 (0-4.0)	25	2.0 (0-5.0)	164	2.0 (0-5.0)	.93
Affective disturbance	21	0 (0-5.0)	25	1.0 (0-5.0)	164	1.0 (0-5.0)	.55
Denial	22	4.0 (0-5.0)	24	4.5 (1.0-5.0)	163	4.0 (0-5.0)	.56
Irritability	21	2.0 (0-5.0)	25	1.0 (0-4.0)	164	1.0 (0-5.0)	.26
Second-Order Factors							
Whiteley index of hypochondriasis	20	3.0 (0-9.0)	25	3.0 (0-8.0)	153	3.0 (0-13.0)	.83
Affective state	21	2.0 (0-14.0)	25	3.0 (0-10.0)	158	3.0 (0-18.0)	.70
Disease affirmation	20	7.0 (4.0-11.0)	24	6.0 (2.0-10.0)	156	6.5 (3.0-11.0)	.63

*Data are given as median (range).

†P values were calculated using the Kruskal-Wallis test.

and quality of life, one might anticipate the converse to be true for the failures.³⁻⁵ A previous poor outcome leading to the reinvestigation of postoperative problems was not associated with significant differences in illness behavior in our study.

Unsurprisingly, there were significant differences in lower esophageal resting pressure, gastroesophageal junction nadir pressure, and number of reflux episodes per 24 hours between the 3 groups, demonstrating the effect of previous surgery. Within the postoperative symptoms group, some patients had objective evidence of recurrent reflux manifested by a significant difference in total percentage of time esophageal pH was less than 4.0, and they underwent revision procedures. Our data suggest that patients who present with recurrent reflux appear to have a physical illness rather than abnormal illness behavior underlying their condition. Similarly, patients with postoperative problems and no evidence of reflux on pH studies showed no significant difference in illness behavior.

Our results should be interpreted with caution because the number of patients in each postoperative subgroup is small, and the questionnaire may be insufficiently sensitive to detect subtle differences in illness behavior resulting in a type II statistical error. This study also included an inherent selection bias because patients with postoperative problems were assessed by a surgeon and considered potential candidates for revision antireflux surgery. Other patients who have different illness behavior characteristics may have postoperative problems that are not being reinvestigated. In summary, patients with postoperative problems after antireflux surgery exhibit illness behavior similar to that in patients with primary gastroesophageal reflux disease irrespective of whether they have objective evidence of recurrent reflux or other postoperative symptoms.

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