

# Influence of Additional Post-Bronchoscopy Visit on Patient Satisfaction after Flexible Bronchoscopy

Jong Sun Park<sup>1</sup>, Jeong-Seon Ryu<sup>2</sup>, Sang-Min Lee<sup>1</sup>, Jae-Joon Yim<sup>1</sup>, Chul-Gyu Yoo<sup>1</sup>, Young Whan Kim<sup>1</sup>, Sung Koo Han<sup>1</sup>, Young-Soo Shim<sup>1</sup>, and Seok-Chul Yang<sup>1</sup>

<sup>1</sup>Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine and Lung Institute of Medical Research Center, Seoul National University College of Medicine, Seoul; <sup>2</sup>Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Inha University School of Medicine, Incheon, Korea

**Background/Aims:** Many patients undergoing a flexible bronchoscopy (FB) experience anxiety and discomfort during the procedure. We assessed whether an additional patient visit after a FB would improve patient satisfaction.

**Methods:** The study patients were randomly assigned to a control and post-visit groups. The physicians who were scheduled to perform the FB visited the study patients. The control group had one visit before the FB and the post-visit group had a before and after FB visit. The post-visit group received additional information and support during the second visit. Twenty-four hours after the FB, the participants completed questionnaires about discomfort and satisfaction with the procedure.

**Results:** The control and post-visit groups included 151 and 153 patients, respectively. The post-visit group reported having more information after the FB than the control group. The additional post-bronchoscopy visit improved the general patient tolerability of the procedure. The willingness to return for another FB was not affected by the post-bronchoscopy patient visit.

**Conclusions:** The post-bronchoscopy visit improved patient satisfaction and general tolerability to the procedure. Subjective patient tolerability with the FB may be improved through a post-bronchoscopy visit by providing more information and emotional support to patients. (**Korean J Intern Med 2010;25:392-398**)

**Keywords:** Bronchoscopy; Patients; Personal satisfaction

## INTRODUCTION

Flexible bronchoscopy (FB) is a commonly performed invasive procedure that is useful for the diagnosis and treatment of respiratory disease [1,2]. Many patients who undergo bronchoscopy are fearful of the procedure and experience anxiety and discomfort during FB [3,4]. Sedative premedication has been used frequently in an attempt to relieve such anxiety and discomfort, but use of these drugs may result in undesired complications such as hypoxia or hypotension [5] and poor patient cooperation because of the sedative effects.

Some studies suggest that a patient's discomfort can be relieved by providing better or more complete information about the examination [6-10]. Moreover, the quality of the information provided to patients is a major determinant of the satisfaction with their care [11]. However, many patients are provided limited information about their hospital care [12-14], and feel that more attention should be paid to nontechnical aspects of their care [15]. In one study [13], 20% of the patients who underwent diagnostic tests reported problems with communication of the test results. If physicians provided patients with more information and an opportunity to ask questions after

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**Correspondence to Seok-Chul Yang, M.D.**

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine and Lung Institute of Medical Research Center, Seoul National University College of Medicine, Yeongeon-dong, Jongno-gu, Seoul 110-744, Korea  
Tel: 82-2-2072-0354, Fax: 82-2-762-9662, E-mail: scyang@snu.ac.kr

procedures, patients may be more satisfied with them. Therefore, the goal of this study was to determine whether providing more information and emotional support after a FB would increase patient satisfaction. We assessed whether an additional patient visit after a FB would improve patient satisfaction.

## METHODS

### Study design and subjects

A prospective randomized study was conducted at Seoul National University Hospital, a tertiary care hospital. The study was approved by the Seoul National University Hospital ethics review committee and conducted in compliance with the Declaration of Helsinki. Adult patients (aged 18 years or older) admitted to the respiratory department were enrolled. Exclusion criteria were as follows: involvement in outpatient procedures; therapeutic FBs (e.g., cases of photodynamic therapy, electrocautery, or laser therapy), an expected operation or discharge within 24 hours after a FB, sedative premedication, endotracheal intubation with mechanical ventilation, and inability to speak Korean.

The enrolled patients were randomized to either the control or post-visit groups after the procedure was completed, according to a random sample chart of numbers. One day prior to the FB, all study patients had a visit from the physician who was scheduled to perform the operation. During the pre-bronchoscopy visit, the patient was examined and received information about the FB, including a general description and possible complications related to it (Appendix). Patients in the control group had only the pre-bronchoscopy visit. Patients in the post-visit group had an additional post-bronchoscopy (second) visit, as well as the pre-bronchoscopy visit within 24 hours after the FB. After the operation, all patients received the results from the attending doctor. Additionally, the post-visit group had the FB results report repeated with emotional support provided by the examiners. During the post-bronchoscopy visit, the patients were examined again and evaluated for FB-related complications using a standardized protocol (Appendix).

The patients completed self-administered questionnaires 24 hours after the FB. Patients were asked to grade their discomfort (anesthesia, cough, dyspnea, and throat pain) and satisfaction (adequacy of information

before and after the FB, general tolerability, and willingness to return). Each item was scored as one of four grades: 1, never; 2, minimal; 3, moderate; 4, severe. Questionnaires were analyzed by comparing the number of patients who checked grades 1 and 2 vs. grades 3 and 4 between the control and post-visit groups. Other variables were analyzed including the details on how the FB was performed, the outcomes of the procedure, and the amount of time spent visiting patients. The medical records were reviewed to examine smoking history, level of education, and patient insight into the relevant disease.

### Bronchoscopy

The FB was performed by faculty or fellows in the pulmonology division under the supervision of faculty staff. An intramuscular injection of 25 mg pethidine (meperidine) was used as baseline premedication. For local anesthesia, aerosolized lidocaine (2%, 20 mL) was sprayed into the oropharynx with the patient in a seated position. The bronchoscope was then inserted through the mouth. After insertion of the scope, a 1% lidocaine solution was sprayed into the tracheobronchial tree through the scope for additional local anesthesia.

### Statistical methods

Analyses were performed using SPSS version 12.0 (SPSS Inc., Chicago, IL, USA).  $\chi^2$  tests for categorical data and independent sample *t* tests for continuous data were performed to evaluate the differences between the two groups; *p* values < 0.05 were considered significant.

## RESULTS

### Study population and baseline characteristics

During the study period, 389 of 488 eligible patients were enrolled; 196 and 193 patients were randomly assigned in a 1 : 1 ratio to the control and post-visit groups, respectively (Fig. 1). A total of 304 patients (78%) completed the questionnaire, and we confined our analysis to those patients. Finally, 151 controls and 153 post-visit patients were evaluated. The baseline characteristics of the patients are shown in Table 1. No differences were observed between the groups for age, gender, smoking history, supplemental oxygen use, previous experience with FB, education level, or insight into their diseases. Procedure-related factors, such as the duration of FB,

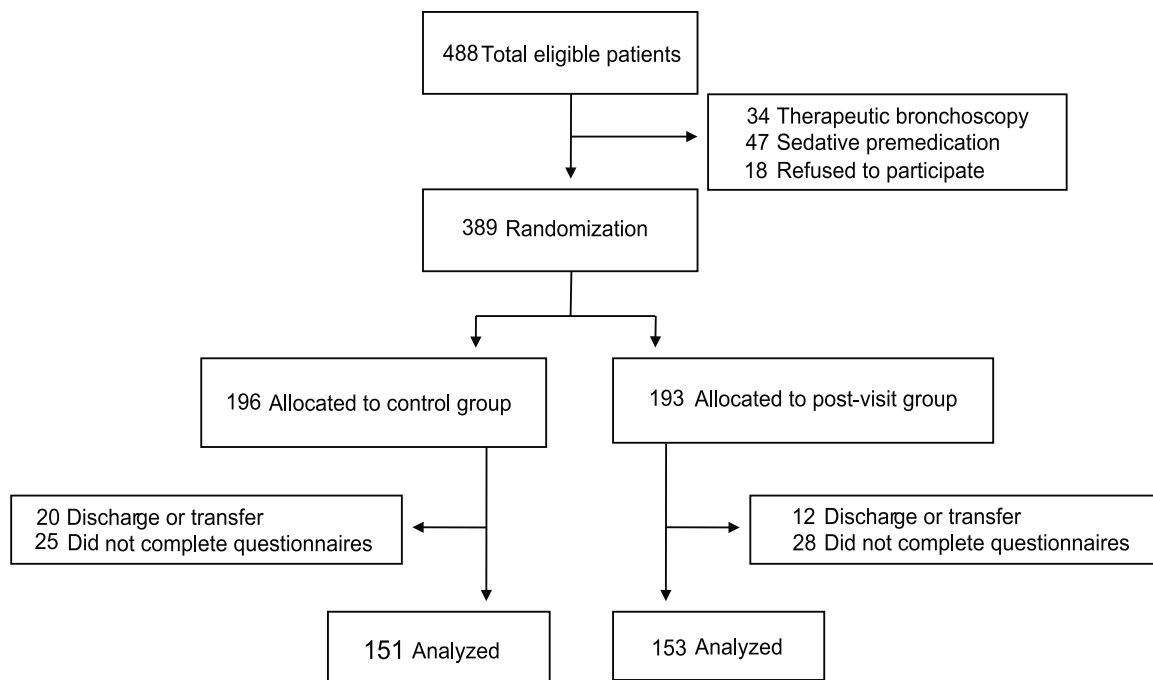


Figure 1. Participant flow through the trial.

Table 1. Baseline characteristics

Variables	Control (n = 151)	Post-visit (n = 153)	p value
Age, yr	58.6 ± 12.4	59.9 ± 11.4	0.33
Male	72 (58.5)	69 (58.5)	0.99
Smoking	83 (55.0)	75 (49.0)	0.29
Supplemental oxygen use			
Yes	14 (9.3)	14 (9.2)	
No	137 (90.7)	139 (90.8)	0.56
Experience with FB			
First time	136 (90.1)	136 (88.9)	
One or more previously	15 (9.9)	17 (11.1)	0.73
Education (completed)			
Elementary school	45 (29.8)	46 (30.1)	
Middle school	25 (16.6)	29 (19.0)	
High school	34 (22.5)	31 (20.3)	
College or above	47 (31.1)	47 (30.7)	0.93
Insight			
Yes	143 (94.7)	144 (94.1)	
No	8 (5.3)	9 (5.9)	0.82

Values are presented as mean ± SD or number (%).

FB, flexible bronchoscopy.

**Table 2. Procedure-related outcomes**

Variables	Control (n = 151)	Post-visit (n = 153)	<i>p</i> value
Duration, min	15.1 ± 5.4	15.2 ± 5.1	0.87
Amount of lidocaine, mL	45.0 ± 8.6	46.0 ± 14.0	0.46
Amount of saline, mL	51.8 ± 55.2	51.9 ± 49.6	0.98
Intrabronchial bleeding	33 (21.9)	28 (18.3)	0.43
Bronchoscopic procedures			
None	33 (21.9)	30 (19.6)	0.62
Washing	95 (62.9)	105 (68.6)	0.29
Biopsy	41 (27.3)	44 (28.9)	0.75
BAL	16 (10.6)	14 (9.2)	0.67
TBLB	6 (4.0)	7 (4.6)	0.79
Brushing	1 (0.7)	4 (2.6)	0.18
TBNA	5 (3.3)	8 (5.2)	0.40
Examiner			
Faculty staff	57 (37.7)	55 (35.9)	
Fellow	94 (62.3)	98 (64.1)	0.74

Values are presented as mean ± SD or number (%).

BAL, bronchoalveolar lavage; TBLB, transbronchial lung biopsy; TBNA, transbronchial needle aspiration.

amounts of lidocaine and saline used, and operator skill did not differ between the two groups (Table 2). The mean time spent on the pre-procedure visit was  $4.7 \pm 2.4$  and  $4.1 \pm 1.8$  minutes in the control and post-visit groups, respectively. In the post-visit group, the mean time spent on the post-bronchoscopy visit was  $4.0 \pm 2.5$  minutes.

### Measures of patient satisfaction

The post-visit group reported having more information after the FB than the control group (Table 3). Furthermore, the general tolerability of the procedure was greater in the post-visit group than in the control group (58.8% vs. 37.7%;  $p < 0.001$ ). However, no differences were observed between the two groups regarding willingness to return for another FB or discomfort due to anesthesia, cough, dyspnea, or throat pain (Table 3).

## DISCUSSION

Several studies have investigated methods for reducing fear and discomfort during a FB, but most have focused on the use of medication [16,17]. Relatively few studies have investigated the change in patient satisfaction with a FB through non-pharmacological interventions [18,19]. This is the first study to evaluate whether an additional post-bronchoscopy patient visit affected patient satis-

faction with a FB. This study was unique in that we did not depend on medications, such as sedatives or anxiolytics, to comfort patients, but rather investigated the impact of a post-bronchoscopy visit on patient satisfaction.

Information provided before a procedure increases patient satisfaction [1,7], but the effects of providing information and emotional support after the procedure had not been determined. The post-bronchoscopy visit significantly improved patient tolerance of the FB without changing the procedure technique or providing premedication, suggesting that patient tolerance of an invasive procedure can be changed by an intervention after its completion. Psychological and/or physical stress from the invasive procedure likely can be influenced by counseling and support provided after the event, such as with post-traumatic stress syndrome [20].

Several studies have shown that patients and physicians have different opinions about patient care [15,21,22]. In one study [21], patients and physicians agreed that the most crucial element of outpatient care is clinical skill, but they disagreed about the importance of other aspects of care, particularly on the effective communication of health-related information. Therefore, understanding these differences in physician perceptions compared to patient perceptions may be important in improving patient care and satisfaction. In this respect, the post-bronchoscopy visit improved patient tolerance of the FB

**Table 3. Patient satisfaction and discomfort with flexible bronchoscopy**

Variables	Control (n = 151)	Post-visit (n = 153)	p value
Satisfaction			
Information before FB			
Very poor, poor	79 (52.3)	83 (54.2)	0.73
Good, fair	72 (47.7)	70 (45.8)	
Information after FB			
Very poor, poor	105 (69.5)	60 (39.2)	< 0.001
Good, fair	46 (30.5)	93 (60.8)	
General tolerability			
Tolerable	57 (37.7)	90 (58.8)	< 0.001
Not tolerable	94 (62.3)	63 (41.2)	
Willingness to return			
Yes	14 (9.3)	21 (13.7)	0.22
No	137 (90.7)	132 (86.3)	
Discomfort			
Anesthesia			
Discomfort	32 (21.2)	28 (18.3)	0.52
No discomfort	119 (78.8)	125 (81.7)	
Cough			
Present	43 (28.5)	36 (23.5)	0.32
Absent	108 (71.5)	117 (76.5)	
Dyspnea			
Present	36 (23.8)	30 (19.6)	0.37
Absent	115 (76.2)	123 (80.4)	
Throat pain			
Present	13 (8.6)	9 (5.9)	0.35
Absent	138 (91.4)	144 (94.1)	

Values are presented as number (%) and analyzed with  $\chi^2$  tests.

FB, flexible bronchoscopy.

by enhancing the communication between patient and physician. Furthermore, Bernasconi et al. [23] reported that among patients who had pre-bronchoscopy anxiety, 50% rated their anxiety as unjustified after the procedure. A post-bronchoscopy visit might play an important role in alleviating post-procedure anxiety in patients.

Although the post-bronchoscopy patient visit increased patient tolerance of the FB, the acceptance of a repeat FB was not changed by this intervention. The acceptance of a repeat FB procedure may be influenced by various factors other than a post-bronchoscopy visit such as personal values, insight into their diseases, health status, as well as cost [9]. Otherwise, willingness to return for a repeat FB might not be a significant factor associated with patient satisfaction in Korean subjects, as suggested by Choi et al. [24].

In our study, the overall willingness to return for a FB was 13%, which is very low compared to previous studies (27 to 98%) [9,23-25]. Several explanations are possible for this finding. First, a sedative drug was not used. As sedative premedication for FB is not used routinely in our institution, we performed FB without sedative drugs in this study. However, sedatives for FB should be considered because a post-bronchoscopy visit alone did not improve the overall willingness to return. Second, our question about willingness to return did not include the clause, 'if necessary' which might have reflected patient responses that were more emotional than rational.

The limitations of this prospective study include the following. First, factors other than the post-visit that can influence patient satisfaction were not completely considered [7,9,17]. Individual anxiety levels or coping

styles, waiting time for the FB, and the FB environment were not evaluated in the present study. Furthermore, a possibility of post-visit bias may have existed among the physicians. To minimize individual variation, the post-bronchoscopy visit was performed according to a standardized protocol. However, several factors were not controlled by the protocol such as age, gender, personality, and physician attitude.

In conclusion, the results suggest that a post-bronchoscopy patient visit improved patient satisfaction and general tolerability by providing more information to patients. Furthermore, a post-bronchoscopy visit can improve patient tolerance of a FB without changing the bronchoscopy technique. Clinicians should be concerned about patient discomfort and attempt to provide more attentive patient care and information to improve patient satisfaction with a FB.

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

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## APPENDIX

Protocol for pre-bronchoscopy and post-bronchoscopy visits.

### **Pre-bronchoscopy visit**

1. Examine the patient.
2. Explain general flexible bronchoscopy (FB) procedure and possible complications (bronchospasm or laryngospasm, bleeding, infection, pneumothorax) to the patients.

### **Post-bronchoscopy visit**

1. Examine the patients again.
2. Evaluate for complications after the FB.

#### *Examples:*

- A. Do you have pain, shortness of breath, bleeding, fever, or chills?
- B. If you have any of these symptoms, please notify the nurses or

doctors.

3. Explain the results of the FB.
4. Ask how the patients felt about the procedure and provide emotional support.

#### *Examples:*

- A. How did you feel during the flexible bronchoscopy procedure?
- B. the flexible bronchoscopy procedure bother you? How much did it bother you?
- C. It was a very important and necessary procedure for the diagnosis and treatment of your medical problem. You tolerated the flexible bronchoscopy very well and the results are important for your care.