



## Dignostic Yield of Fiberoptic Bronchoscopy in a Teaching Hospital

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### Abstract

Fiberoptic bronchoscopy is minimally invasive procedure which can be performed on outpatient basis. The study is a reterospective review of the data at a tertiary center and compares the diganostic yield of the patients (n=720), who underwent FB at our pulmonary unit with the data from international centers. The diagnostic yield of the FB was high(70%) with good selection of the patients and growth was the most common finding followed by infections. FB was normal in 218(30%) patients. Flexible fiberoptic bronchoscopy is a useful diagnostic tool with a low rate of complications. The diagnostic yield in our institution is almost similar to that reported in other series.

### Key words

Fiberoptic Bronchoscopy, Infection, Malignancy

### Introduction

Fiberoptic bronchoscopy (FB) is a useful procedure in the diagnosis and management of pulmonary diseases. Its widespread availability and ease of procedure has encouraged its use in Pulmonology units as a routine procedure. FB is a minimally invasive procedure that can be undertaken in the outpatient with minimal sedation. It is a relatively safe procedure with appropriate preparation and supervision and has low rates of complications(1,2). The diagnostic yield of FB is high, though it depends on the indication and the technique used (2-5). The yield also depends upon the referral patterns from the various departments to the pulmonary units for FB. The purpose of this study was to evaluate the diagnostic yield of the patients who underwent FB at our pulmonary unit.

### Material and Methods

Retrospective analysis of bronchoscopy records of patients taken for FB in the Department of Chest Diseases, at our hospital, which is a tertiary care teaching hospital catering to both rural and urban population was done. Patients taken for FB from 1st January 2006 to 31st December 2007 analysed. The data was collected about the demographic profile of the patients, the referral

department, and indication of referral. Data was also recorded about the chest X ray findings and the final report of the FB findings was recorded.

Growth was defined as a raised area or mass protruding into the lumen of the bronchus or trachea, hypertrophied mucosa was defined as generalized increase in the thickness of the mucosa, inflamed mucosa was defined as erythematous mucosa with increased vascularity. Carbon deposits were defined as presence of black sooty deposits on the bronchial mucosa, purulent secretions were defined as presence of yellow colored secretions in the bronchial tree. Bleeding was defined as presence of active bleeding or blood clots in the bronchial tree. Vocal cord pathology was defined as presence of vocal cord paralysis or nodules over the vocal cords. Pressure from outside was defined as presence of bulge of the wall of the bronchus into the lumen.

### Results

A total of seven hundred and fifty two patients were referred for FB in the two year period out of which 619(82%) patients were males. The mean age of the patients was  $57 \pm 14.4$  years. Most of the patients were referred from the Chest Diseases Hospital 653 (86%) followed

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**Table 1: Referral Department**

Referral Department	No. of Patients
Chest Diseases	653
Medicine	57
ENT	23
Cardiothoracic Surgery	5
District Hospital	4
Surgery	4
Pediatrics	2
Others	4

**Table 2: Presenting Symptoms of the Patients**

Presenting Symptoms	No. of Patients
Cough	449
Hemoptysis	165
Chest pain	138
Breathlessness	120
Fever	55
Hoarseness of voice	51
Purulent expectoration	22

*Patients had more than one symptom*

by those from the Department of medicine 57(7.5%), and ENT 23(3%) (Table1). The most common complaint of the patient was cough 449(59%), hemoptysis 165(21%) , chest pain 138 (18%) , breathlessness 120(15%), fever 55(7%) , hoarseness of voice 51(7%) and purulent excretions 22 (3%) (Table 2) Opacity in the lung parenchyma was the most common finding on chest X ray in 358 (72%) followed by haziness 94(12%) and collapse of lung 31 (4%). X ray was normal in 149 (19%) of the patients (Table 3).

A total of 720 patients were taken for FB as 32 patients were either unfit or reluctant for FB. Growth was seen in 231(32%) patients and was the most common finding followed by purulent secretions 56 (7.7%), vocal cord pathology 52 (7.2%), carbon deposits 47 (6.5%) and hypertrophied mucosa in 32 (4.4%) patients. Bronchoscopy was normal in 218(30%) patients (Table 4) thus revealing a diagnostic yield of 70%.

### Discussion

In the retrospective analysis of the 752 consecutive patients referred for bronchoscopy at a tertiary care centre over a period of 2 years , the diagnostic yield was high (534/720) 74%. The diagnostic yield in our study is higher than what has been reported in other studies from

**Table 3: Chest X Ray Findings**

Chest X Ray Findings	No. of Patients
Opacity Lung Fields	358
Normal	149
Haziness	94
Collapse lungs	31
Mass lesions	18
Hilar prominence	17
Fibrotic Lung	13
Emphysema	12
Cavity	11
Pleural Effusion	10
Cystic Changes	7
Consolidation	6
Destroyed Lung	5
Others	21

**Table 2: Fiberoptic Bronchoscopy Findings**

Bronchoscopy Finding	No. of Patients
Growth	231
Purulent secretions	56
Vocal cord pathology	52
Carbon deposits	47
Hypertrophied mucosa	32
Pressure effects from outside	30
Blood clots	29
Inflamed mucosa	15
Necrotic materia	16
Whitish patches bronchial mucosa	4
Normal	218

Europe and Middle East which was 57% and 58% respectively(3,4). The higher yield of FB in our study could be explained by the fact that our Department caters to a population of more than five millions and the resulting pressure on the facility leads to use of FB in patients who are more likely to have an underlying pathology. A majority of the patients in our study were males (86%), this might be a reflection of higher prevalence of risk factors like smoking in males and also less use of the medical services by the females in our population. Most of the patients presented in the 6th decade of life which reflects the morbidity in the higher age group. Most of the patients were referred from the Department of Chest diseases which could be a referral



bias with patients reporting to the Department of Chest diseases being more likely to have a pulmonary pathology. Growth was the most common finding followed by infection, this is consistent with studies from West(3). Which suggested the overall diagnostic yield to be 57% (245/430). Bronchoscopy performed for suspected tumours confirmed malignancy in 43% of cases. Bronchoscopy in suspected infection and tuberculosis identified pathogenic organisms in 46% and 27% of cases, respectively. Another study from India also found malignancy in 30% of the patients taken for bronchoscopy (6). Study by Alzeer *et al* (2) suggested similarly infection, including mycobacterium tuberculosis, and malignancy to be the second main indications for FFB (35.9% and 25.9%). The overall diagnostic yield was 58%. Tuberculosis was diagnosed in 67% of suspected cases, whereas bacterial pneumonia was diagnosed in 40.5%. Malignancy was confirmed in 61.2% of suspected cases. Bronchoscopy diagnosed 37 (43%) of 86 patients with interstitial lung disease. The diagnostic yield was 57% for sarcoidosis, 40% for usual interstitial pneumonia and 88% for bronchiolitis obliterans organizing pneumonia. The overall complication rate was 5%; pneumothorax occurred in 0.56% and was associated exclusively with transbronchial biopsy. No mortality was

observed. Thus in there study they suggested flexible fiberoptic bronchoscopy is a useful diagnostic tool with a low rate of complications.

### Conclusion

Thus, the present study suggest that the diagnostic yield of the FB is high with good selection of the patients and growth was the most common finding followed by infections.

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