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EFFICACY AND SAFETY OF FIBREOPTIC BRONCHOSCOPY IN DIAGNOSIS OF LUNG LESIONS OF VARIOUS SIZES AND LOCATIONS

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ABSTRACT: BACKGROUND: Fibreoptic bronchoscopy is evolved over time as a popular diagnostic technique. Present study was done to evaluate its efficacy and safety in lung lesions of various sizes and locations. **MATERIALS AND METHODS:** We performed fibreoptic bronchoscopy in 49 patients who were not diagnosed by routine conventional methods. **RESULTS:** We could diagnose 22 out of 49 patients (44.9%) in different subgroups. We diagnosed 76.9% of large central 50% of small central 30.4% of large peripheral and 20% of small central lesions. We encountered no major side effects. **CONCLUSION:** Fibreoptic bronchoscopy is a good diagnostic tool for central lesions and specially endoscopically visible lung lesions. While for peripheral lesions we should use other diagnostic procedures also.

KEYWORDS: Fibreoptic Bronchoscopy, Lung Lesions, Central, Peripheral.

INTRODUCTION: Since first bronchoscopy done by a German Gustav Killian in 1897 by a rigid bronchoscope to remove a foreign body, these scopes were used by various workers to diagnose chest problems and to remove foreign bodies but the use of bronchoscopy was limited as a routine diagnostic method¹. Then in 1966 fibreoptic bronchoscope was invented by a Japanese called Shigeto Ikeda.¹ Which transformed the bronchoscopy as a diagnostic investigation to be used worldwide and it now becomes very common.² The ability to enter lobar and segmental bronchi was very unique. Most of the bronchoscopes have a suction or instrumentation channel also. Fibreoptic bronchoscope was costly initially and not available everywhere. But now availability of fibreoptic bronchoscopy is increased and various new techniques were evolved with time. Present study is done to evaluate role of fibreoptic bronchoscopy in diagnosis of lung lesions of various sizes and locations.

MATERIALS & METHODS: We performed fibreoptic bronchoscopy in 49 patients not diagnosed by any other routine diagnostic method attending at Chhattisgarh Institute of Medical Sciences CIMS Bilaspur. All patients were given Inj. atropine IMI 30 minutes before the procedure as an antianxiety drug and to dry up any secretions present in the respiratory tract. Inj. Midazolam IV was used 5 minutes before the procedure (0.05mg/kg) to sedate the patient. This is very useful in apprehensive patients.

The fibreoptic bronchoscopy is done after overnight fast and patients lying on their back in a comfortable position. Topical lidocaine was sprayed on back of throat i.e. oropharynx and nasopharynx. Fibreoptic bronchoscope was passed from nose by continuously spraying topical lidocaine. After crossing vocal cords trachea scope goes to bronchial tree. If any abnormality seen punch biopsy was taken by using a crocodile forceps. If any abnormal area was seen brush smear was taken. And bronchoalveolar lavage was done from a suspected area.³

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We formed four groups of patients keeping in view site and size of lesions. We divided lesions by radiological basis as chest lesions were called central when they were near the hilum or mediastinum in chest x-ray PA and lateral view, and there was intervening lung parenchyma between lesion and chest wall. If there is no intervening parenchyma lesion was called peripheral. A lesion is considered small when its greatest diameter was 2cm or less on a chest radiograph. So in all four categories of lesions were formed viz large central, small central, large peripheral and small peripheral⁴. Post procedure for we observed patients for four hours any serious complications.

OBSERVATION AND RESULTS: We did fiberoptic bronchoscopy in 49 patients and got following results.

	Large Central No. %	Small Central No. %	Large Peripheral No. %	Small Peripheral No. %	Total No. %
Total Cases	13	8	23	5	49
Diagnosed by fiberoptic bronchoscopy	10 (76.9%)	4 (50%)	7 (30.4%)	1 (20%)	22 (44.9%)

Table 1

Complications occurred in fiberoptic bronchoscopy Total No. of cases 49

Total No. of cases	49
Complication occurred in	27
Chest pain	20
Streaking	17
Major hemoptysis	2
Both pain & hemoptysis	15

Table 2

Distribution of cases according to final diagnosis

Sl. No.	Diagnosis	Number	Percentage
1.	Squamous cell carcinoma	24	51.06
2.	Small cell carcinoma	11	23.4
3.	Adenocarcinoma	5	10.6
4.	Pulmonary tuberculosis	2	4.25
5.	Large cell carcinoma	1	2.12
6.	Positive for malignant cell	2	4.25
7.	Lymphoma	1	2.12
8.	Cryptococcosis	1	2.12

Table 3

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So we diagnosed 76.9% of large central, 50% of small central, 30.4% of large peripheral and 20% of small peripheral lesions.

DISCUSSION As we diagnosed mostly central lesions, so it is clear that fiberoptic bronchoscopy is a diagnostic tool mostly for central lesions. It is due to difficulty to reach peripheral lesions as scope could not negotiate into smaller bronchi. Also diagnostic yield from central lesions is better than peripheral if adequate material is obtained. Although fiberoptic bronchoscope could not be negotiated into smaller bronchi but bronchoalveolar lavage helped us to get diagnosis. So besides punch biopsy and brush smear lavage also helped us in few cases.⁵ Sputum for malignant cells done post procedure also helped in diagnosis. Among the central lesions, large central lesions diagnosed more frequently.⁶ So site and size are very important factors as most workers agree that if size is less than 2cm chances of diagnosis by fiberoptic bronchoscopy decreases.^{6,7,8} And also diagnosis of peripheral lesions is difficult by fiberoptic bronchoscopy and specially small peripheral lesions so alternative diagnostic procedure must be used in peripheral lesions and specially small peripheral lesions.⁹ Diagnostic yield by fiberoptic bronchoscopy was 44.9% which is in accordance to Catherine labbe et al.¹⁰ Low yield could be attributed to more number of peripheral lesions. We also observed endoscopically visible lesions were easily diagnosed.¹¹

We observed many cases of malignancy as we included cases which were not diagnosed by other conventional methods. Benign cases were easily diagnosed by other methods. In fiberoptic bronchoscopy only minor side effects of chest pain and streaking were seen which were managed symptomatically and by giving reassurance to the patients. We required to manage hemoptysis aggressively in two cases. In our study increased diagnosis of central lesions by fiberoptic bronchoscopy was statistically significant. So fiberoptic bronchoscopy is more useful in diagnosing central lesions and endoscopically visible lesions which is in accordance to Martini N Mc Cormik PM et al.¹¹

CONCLUSION: The present study established that fiberoptic bronchoscopy is quiet safe, simple and well tolerated procedure and is an important tool in diagnosis of lung lesions.¹² Although Fiberoptic bronchoscope is less useful in diagnosis of peripheral lesions, particularly small peripheral lesions of less than 2cm diameter it has special importance in diagnosis of central lesions.

REFERENCES:

1. Ikeda S. Yanai N flexible bronchoscope kejo J Med; 1968; 17; 1-16.
2. Jindal et al, Experience with fiberoptic bronchoscopy in lung cancer IJCD and allied sciences 1982, 24, 239.
3. Piaton E, grillet-ravigneaux m, saugier b. et al; Prospective study of combined use of bronchial aspirates and biopsy specimen in diagnosis and typing of centrally located lung tumors. Br Med Jou 1995; 310; 624.
4. Marjan jereb; usefulness of needle biopsy in chest lesions of different sizes and locations; Radiology; 134; 13-15; Jan 1980.
5. P.A. Kvale et al chest diagnostic accuracy of lung cancer; comparison of techniques used in association with flexible fiberoptic bronchoscopy; chest; 1976 (6) 752-57.
6. Stringfield JT Markowitz DJ et al; The effect of tumor size and location on diagnosis of fiberoptic bronchoscopy; chest 1977; 72; 474-476.

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7. Walid A. Baaklini, Mauricio A Reinoso et al; Diagnostic yield of fibreoptic bronchoscopy in evaluating solitary pulmonary nodules; chest 2000, 117 (4) 1049 – 1054.
8. Radke JR, Conway W.A. et al; Diagnostic accuracy in peripheral lung lesions factors predicting success with flexible fibreoptic bronchoscopy chest 1979 Aug 76 (2) 176 – 9.
9. Levine MS. Weiss JM et al; Transthoracic Needle aspiration biopsy following negative fibreoptic bronchoscopy in solitary pulmonary nodule chest 1988; Jun 93 (6); 1152 – 5.
10. Catherine Labbe, stephane Beaudoin et al Diagnostic yield of non-guided flexible bronchoscopy for peripheral pulmonary neoplasm. Thoracic cancer ISSN 1759 – 7706; 6 (2015) 517 – 523.
11. Martini N. McCormick P.M.; Assessment of endoscopically visible bronchial carcinomas chest; 73, 718-20; 1978.
12. Batau Bhadke et al; utility of fibreoptic bronchoscopy in diagnosis of various lung conditions; our experience at rural medical college; lung India; 2010; July – Sept 27 (3); 118 – 121.

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