A BRIEF REVIEW OF FIBEROPTIC BRONCHOSCOPY
PROCEDURE, INDICATIONS, CONTRA INDICATIONS
AND COMPLICATIONS.

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Chevalier Jackson described bronchoscopy as
"looking into the living lungs". Major advances in
technology since that time have given the
bronchoscopist of today not only the opportunity to
view the fine details of the endobronchial anatomy
but also the capability of diagnosing, understanding,
and even treating diseases that were formerly
"beyond the scope" of medical science. Since the
introduction of fibroptic bronchoscopy by Ikeda in
1966, it has become so intricately woven into the
same work of treating disease of the chest that it is
now no longer possible for any one to practice in this
field of medicine or surgery without some mastery of
this procedure.

The primary objectives of Fiberoptic bronchoscopy
is the direct visualisation of the tracheobronchial
tree, including abnormalities, to obtain biopsy of the
lesion for histopathological examination, to collect
lavage and bronchial brushing for cytology, culture
and sensitivity examination. It allow the
bronchoscopist to see centrally place tumours
thereby enabling surgical decision, regarding
operability to be taken.

Key Words: Fiberoptic bronchoscope

Pak - J Chest Med 1996; 2: 2; 13-16

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Description of the Bronchoscope:

The fiberoptic bronchoscope consists of a rigid
hand piece and a long flexible tube, which is
advanced into the lungs. The flexible portion is
usually 55 to 60 cm long in instruments for use
in current use transmit images via fiberoptics.
Newer types of flexible bronchoscope have a
video charged coupled and transmit images
electronically with improved resolution. The
hand piece contains a view fnder lens (not
present in video bronchoscope); a thumb lever
for cable actuated flexion and extension of the

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Karachi bronchoscope tip; a finger operated suction
value opposite the thumb lever, an instrument
port for passing catheters and forceps or for
instillation of liquid through the “working
channel” and a metal nipple for connection to
suction source. The viewing angle from the tip of
the bronchoscope may be upto 100 degrees (120
degree with video bronchoscope) and the tip may
be angulated in an arc of upto 280 degrees. There
is also an extension of flexible fiberoptic cable
that connects to the light source. The external
diameter of the flexible portion of the
bronchoscope may vary from 3.4 to 5.9 mm. The
working channel to which suction is applied and
through which instruments are passed varies
from 1.2 to 2.6 mm in diameter. Larger
bronchoscopes generally have the advantages for
larger working channels for suction and instrumentation. They are better fitted for therapeutic applications such as electrocautery, endobronchial laser therapy, foreign body removal and suctioning of thick secretions. In some cases they also have improved optics.

**Preparation for Bronchoscopy:**
Ideally patients are kept form eating or drinking for six hours prior to bronchoscopy to allow for adequate gastric emptying. The anaesthetic procedures entails some gagging and attendant threat of emesis and concomitant aspiration, and an empty stomach hedges against the risk of pulmonary aspiration. If biopsy is anticipated a history of relevant to bleeding disorder must be obtained prior to bronchoscopy. It is advisable to check activated partial thromboplastin time (APPT) and prothrombin time (P.T).

The patient should be told what to expect during the bronchoscopy. The anaesthetic procedures and side effects of the premedications should be explained for example, lidocain “will make your mouth numb and it will feel hard to swallow” atropine “will make your mouth dry” or diazepam “will make you feel drowsy”. Out patient should be told to bring another responsible person to take them home following the procedure because the effects of sedative medications may linger.

**Procedure:**
Methods of insertion naturally can vary according to institution and operator. These include transoral insertion and transnasal insertion. Choice of method is a matter of personal preference thus we feel the operator should select the simplest method which will achieve its objective and should try to reduce discomfort to the subject as much as possible.

We are using the transnasal insertion under local anaesthesia by spraying the nose and oropharynx with 5-10 ml of 4% lignocaine. Subsequently small amounts of 2% lignocane Jelly is applying to the bending section of instrument to reduce friction during its passage through nostrils and vocal cord. When the scope is advanced into trachea, carina and bronchi and the segmental bronchi on either side. The visible mass should be biopsied for hisopathology and the secretions are to be collected for cytology and culture. The suspected area can be brushed with the help of the brush, introduced through the channel of the bronchoscope carina.

**Indications:**
Indications for flexible fibreoptic Bronchoscopy are broad but reasonably clear. With modern methods and in well trained hands, the procedure is safe and rewarding for the diagnosis and management of a spectrum of inflammatory, infectious, and malignant diseases of the chest. Although experience and sound clinical judgement will determinate its use in individual cases, the following are broad guidelines that are generally agreed upon.

**A. DIAGNOSTIC USES:**

1. To evaluate lung lesions of unknown aetiology that appear on the chest X-ray as a density, infiltrate, collapse, or localized airway patency.

2. To assess airway patency

3. To investigate unexplained hemoptysis, unexplained cough or change in the nature of cough) localized wheeze or stridor.

4. To search for the origin of suspected or positive sputum cytology.

5. To investigate the etiology of unexplained paralysis of vocal cord, or hemidiaphragm, superior vena cava
syndrome, chylothorax, or unexplained pleural effusion.

6. To evaluate problems associated with endotracheal tubes, such as tracheal damage, airway obstruction, or tube placement.

7. To stage lung cancer preoperatively and subsequently to evaluate, when appropriate, the response to therapy.

8. To obtain material for microbiologic studies in suspected pulmonary infections.

9. To evaluate the airway for suspected bronchial tear or other injury after thoracic trauma.

10. To evaluate the airways for suspected tracheoesophageal fistula.

11. To determine the location and extent of respiratory tract injury after acute inhalation of noxious fumes or aspiration of gastric contents.

12. To obtain material for study from the lungs of patients with diffuse focal lung diseases.

B. THERAPEUTIC USES:

1. To remove retained secretions or mucous plug not mobilized by conventional nor invasive techniques.

2. To remove foreign body.

3. To remove abnormal endobronchial tissue or foreign material by use of forceps or laser techniques.

4. To perform difficult intubations e.g. in patients with cervical spondylitis, dental problems, myasthenia gravis, acromegaly, achalasia, full stomach, small bowel obstruction, and trauma to the head, neck, larynx or trachea.

D. CONDITIONS INVOLVING INCREASED RISK:

As in all clinical situations, the risk of bronchoscopy must be weighed against the potential benefit for the patient. Sound clinical judgement and careful assessment of each patient must predominate, especially in decisions regarding the need for hospitalization. Increased Risk situations include:

1. Lack of patient co-operation.

2. Recent myocardial infarction or unstable angina.

3. Partial tracheal obstruction

4. Unstable bronchial asthma.

5. Respiratory insufficiency associated with moderate to severe hypoxemia or any degree of hypercarbia.

6. Uremia and pulmonary hypertension (possible serious haemorrhage after biopsy).

7. Lung abscess (danger of flooding the airway with purulent material).

8. Immune suppression (danger of bronchoscopy infection).


10. Debility, advanced age, and malnutrition

11. Unstable cardiac arrhythmia.
12. Respiratory failure requiring mechanical Ventilation.

13. Disorders requiring laser therapy, biopsy of lesions, obstructing large, airway or multiple transbronchial lung biopsies.

E. **CONTRA INDICATIONS:**

i) Absence of consent form the patient or his/her representative.

ii) Bronchoscopy by an inexperienced person with out direct supervision.

iii) Bronchoscopy with out adequate facilities and personnel to care for such emergencies as cardiopulmonary arrest, pneumothorax, or bleeding.

iv) Inability to adequately oxygenate the patient during the procedures.

F. **COMPlications:**

i. Benigin arrhythmia.

ii. Malignant arrhythmia.

iii. Profound refractory hypoxemia.

iv. Severe bleeding .

v. Laryngospasm

vi. Bronchospasm

vii. Resp : compromise

viii. Syncope

ix. Post operative fever

x. Pneumonia

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