A Simplified Catheterizing Bronchoscope

J. S. CHASE, M.D.
San Fernando, California

In 1952, we described a catheterizing bronchoscope (1) which utilized the principle of the cystoscope type of deflector at the distal end of the instrument, for the purpose of diverting a catheter into the desired segmental bronchus of the upper lobes. The instrument has since been simplified and improved by placing a permanent deflector in the distal end of a Jackson type bronchoscope (Figures 1 and 2). This deflector is built in the light carrier channel between the end of the globe on the light carrier and the end of the instrument and deflects the catheter at about 90° from the plane of the instrument. It is small enough to allow a right angle telescope to be placed in the main channel of the bronchoscope and also allow movement of the catheter as it passes out of the light carrier channel over it.

Mode of Usage: This permanent deflector decreases visibility only minimally and the bronchoscope containing it may be used for routine bronchoscopic procedures. The bronchoscope is placed in position to visualize the desired bronchial orifice, of the upper, middle or superior basal bronchus. The light carrier is then removed and a No. 7 ureteral catheter is introduced into this same channel. The right angle telescope is then inserted into the main channel and adjusted to visualize the lobar bronchial orifice. The catheter is then aimed to the right or left by turning the handle of the bronchoscope in the opposite direction. The catheter is then rotated between the fingers and pushed forward gently, and it emerges at right angles to the instrument. By visualization through the telescope, the catheter may be inserted into the desired segmental bronchus.

For catheterization of the lower lobe bronchi, the bronchial orifice is visualized as in routine bronchoscopy. An open end suction tube is put through the bronchoscope to the desired orifice, and the catheter inserted through the suction tube into the bronchus.

Indications: The chief indications for the use of the catheterizing bronchoscope are (1) the collection of secretions or the lavage of a bronchial segment of the lung containing the lesion; (2) the determination of the location of a segmental bronchostenosis; (3) therapeutic measures applied locally, such as bronchodilators close to the site of cavities and abscesses; and (4) segmental bronchography.

The value of obtaining secretions segmentally is well illustrated in both pulmonary tuberculosis and bronchogenic carcinoma. Bronchoscopy was done on each of 146 patients with pulmonary tuberculosis; in each one, a routine swabbing was done of the main orifice and any secretions

The Veterans Administration Hospital.

214
Figure 1A: Distal end of bronchoscope illustrating permanent deflector (4 X).

Figure 1B: Distal end of bronchoscope illustrating deflector of the catheter.

Figure 1C: Bronchoscope with catheter and right angle telescope in place.
present were collected and sent for culture; then the suspected segment
was catheterized and lavaged with 2 cc. water. All the swabs and secre-
tions in the main and lobar bronchi were negative on culture for M.
tuberculosis, whereas the segmental lavage produced positive cultures
in 28 patients, or 19 per cent. No spreads followed the procedure.

The same technique was carried out in a number of cases of peripheral
bronchogenic carcinoma. In eight patients the segmental lavage showed
cytological evidence of carcinoma (confirmed subsequently) whereas the
swabs of the main bronchi were negative.

Sterilization of the ureteral catheters is easily effected. The rubber
catheters may be autoclaved. The polyethylene catheters, however, will
disintegrate if autoclaved. Dr. C. Richard Smith2 recommends the use
of Ortho-phenylphenol and soap in equal amounts at a concentration of
1:250. This is obtainable in commercial preparations as (Amphy1 2 per
cent, Lehn and Fink; and Phenolar 5 per cent, Squibb). The solutions
should be drawn into the catheter which is then submerged in the solution
for at least one-half hour. Dr. L. G. Wayne3 has determined that the
solution can be thoroughly washed from the catheters with 60 ml. of
sterile water.

RESUMEN

Se describe un broncoscopio que contiene un deflector permanente y
permite fácilmente cateterizar el bronquio segmentario de los lóbulos su-
periores. Se ha demostrado su utilidad especialmente para recolectar las
secreciones segmentarias así como para el lavado segmentario en los en-
fermos con tuberculosis pulmonar y con carcinoma bronquiogénico.

RESUME

L'auteur présente un bronchoscope muni d'un déflecteur permanent qui
permet de cathétériser aisément les branches segmentaires des lobes su-
périeurs. La démonstration de sa valeur a été particulièrement nette pour
recueillir les sécrétions ou pour pratiquer une recherche bactériologique
par "lavage bronchique" dans des segments précis.

ZUSAMMENFASSUNG

Es wird ein Bronchoskop beschrieben, das mit einem permanenten
Krümmer ausgerüstet ist und dem Untersucher dadurch ermöglicht, die
Segmentbronchien der Oberlappen leicht zu kathetisieren. Sein Wert hat
sich besonders erwiesen beim Auffangen von segmentalen Sekreten und
bei segmentalen Spülungen an Patienten mit Lungentuberkulose und bron-
chogenum Carcinom.

Acknowledgment: The writer is indebted to Dr. David Salkin for his aid and en-
couragement in developing the instrument.

REFERENCES