Disposable polythene catheter; an alternative to the bronchial brushing method for cytology of bronchial secretions obtained with the fibroptic bronchoscope

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The use of a brush to obtain cytological material from suspected bronchial carcinoma was introduced in the 1950s (MacLean, 1958) and was practised in a number of centres before the introduction of fibroptic bronchoscopes (Hattori *et al.*, 1964; Fennessy, 1966; Bean *et al.*, 1968; Bibbo *et al.*, 1973). With the improved and simplified localisation resulting from the flexible bronchoscope, brushing of visible or invisible lesions has become a standard method for transferring cells on to slides for diagnosis (Ikeda *et al.*, 1968; Ikeda, 1970; Zavala *et al.*, 1973; Solomon *et al.*, 1974; Bedrossian and Rybka, 1976). The present communication reports an alternative method, which has several advantages over the brushing technique.

Method

During bronchoscopy, a length of Vygon polythene catheter (1 mm internal diameter) is threaded down the biopsy channel and the end is placed in the desired position. Small samples of secretion are

obtained by an assistant aspirating gently with a syringe. The tubing is withdrawn, and the part of it that contains secretion is cut off with scissors and sent to the laboratory for processing. A number of different samples can be obtained and placed in appropriately labelled containers.

In the laboratory, secretion is expelled from the tubing on to one or more slides by means of air pressure from an aspirator bulb attached to a glass Pasteur pipette. (The end of the pipette is drawn to fit the calibre of the catheter tubing.) Material is spread over a convenient area of the slide, using the end of the pipette, and immediately fixed in ethanol for Papanicolaou staining.

Results

Up to the time of writing, this method has been used in 281 investigations on 273 different patients. Since the two methods interfere with each other, no comparison between brushings and localised bronchial aspirate could be made, but the improvement in diagnostic quality has been striking, and the former method was quickly discarded. The disadvantages of bronchial brushings are, first, that smears have to be made at the time of bronchoscopy, and it is not always convenient for a specifically trained person to be present; consequently, smears that are too thin, or dried before fixation, may be received in the laboratory. Secondly, cells may be lost during withdrawal of the brush, and it is troublesome repeatedly to withdraw the bronchoscope and the brush together (Parker *et al.*, 1977). Thirdly, multiple brush samples require multiple brushes, introducing trouble and expense.

The advantages of the plastic catheter method are as follows. No cells can be lost during withdrawal. The material is sent to the laboratory to be processed by a skilled person at a convenient time. The narrow lumen prevents exposure of the secretion to evaporation, and the cells embedded in mucus remain well preserved for 24 hours. Cytological detail has been found to be excellent. Finally, multiple samples can easily be taken, if necessary beyond the limit of vision.

The morphological appearances are like those of brushings, in that living cells are mechanically detached rather than exfoliated, and they appear relatively undifferentiated compared with corresponding cells in sputum (MacLean, 1958; Bedrossian and Rybka, 1976).

We have preferred to examine Papanicolaou-stained smears, but the same material can be used for any preferred method, including histological sections.

Fig. 1 End of bronchoscope, showing projecting plastic catheter. (Enlarged $\times 2.5$).

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Fig. 2 Three sections of catheter, all containing aspirated bronchial secretion (actual size).

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