BRONCHOSCOPY FOR DISEASE.*

BY

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In suppurative conditions due to foreign body abundant experience has demonstrated that no procedure other than bronchoscopy is worthy of a moment's consideration. In suppurative conditions due to causes other than foreign body the status of bronchoscopy is altogether different; it is merely an adjunct to the medical and surgical care of the case. Both the physician and the surgeon have found a bronchoscopic assistant of great usefulness in diagnosis and in treatment of certain classes of cases.

Pulmonary Malignancy.

Malignant disease of the lung is a mild, and for a long time purely local, process. The bronchoscope is the only means by which an early diagnosis can be made with the certainty required by the surgeon. When the bronchoscope is resorted to early, a positive diagnosis of primary pulmonary malignancy enables the surgeon to cure by lobectomy. One of the most striking things in bronchoscopy for disease is the frequency with which the bronchoscopist finds unsuspected cancer in a patient treated for months, even years, for a supposed benign or tuberculous suppuration. We think every case of haemoptysis in which no tubercle bacilli can be found should be bronchoscopically examined for diagnosis.

Suppurative Pulmonary Disease not due to Foreign Body.

Hippocrates and his predecessors preached drainage of suppurative areas. Throughout the centuries since the days of Hippocrates this has remained the unshaken foundation of all surgery of suppurative disease. The only modern thing is the discovery of the feasibility of drainage through the mouth. The question therefore is, How efficiently can we drain suppurative areas in the lung with the bronchoscope? So far as experience up to the present is an indication we may answer: In a few cases it is hopelessly inefficient; in other cases curatively efficient; in most cases stagnation is prevented, the odour disappears, and the general and local conditions improve. Until 10,000 cases shall furnish data for analysis it will be impossible to classify cases beforehand as to indications for bronchoscopy. Of bronchoscopy for suppurative disease of other than foreign body origin we can only say positively that we can safely and successfully combat stagnation in the bronchi. It becomes a question, then, of how great a factor endobronchial stagnation is in the perpetuation of pulmonary suppuration.

Let us consider for a moment the normal physiological mechanism for the prevention of stagnation of any excess of secretion in the bronchi, large and small. There are three mechanical factors—namely, (1) the "squeeze" of thoracic compression of the lung in cough; (2) the cough blast; (3) ciliary action. Upon the efficient and co-operative activity of these three factors drainage of the human lung depends. A chain is no stronger than its weakest link, and the weakest of the three links in this chain is the ciliary link. It is not at all certain that the ciliary link is the weakest under normal or mildly pathological conditions—in fact, my personal opinion is that it is the most efficient of the three—but I am equally convinced that the ciliary link is the first to weaken and break down in the presence of gross inflammatory changes in the mucosa of bronchi, large and small.

To be convinced of these two statements one has only to see the stream of pus distributed along the posterior wall of the bronchi in recent suppurative conditions of mild degree, evidently an upward flowing stream, and to compare it with the stagnant pool or adherent patch of stale or foul pus in chronic conditions. Considering the structural delicacy of the cilia it is logical to suppose—and the supposition is supported by histological studies—that violent or long-continued inflammatory processes destroy the cilia or impair their activity in the area affected. Then enters

another factor to impair ciliary activity—namely, obstruction due to inflammatory swelling of the mucosa, which, as all bronchoscopists have seen, objectively obliterates the smaller bronchi. Still another factor to impair ciliary efficiency appears if the inflammatory process continues and the already impaired ciliary action is not aided—namely, the development of granulations. The subjacent impaired, or even unimpaired, cilia, if such exist, cannot do much in the way of forcing pus through a bronchus whose lumen is completely occluded with granulations dovetailing together in their mutual approach from opposite positions in the bronchial wall. And, moreover, it must be noted that granulations have no cilia. Hence, a granulating area creates a gap in the continuity of ciliary effort. A cilium, like an individual in the line of a bucket brigade, can pass on only what is received from the adjoining co-worker. The unreplaced dropping out of a number of individuals in the line stops the transmission. This in the bronchi means stagnation, and we may say that stagnation is one of the chief factors in the development of pulmonary abscess and of bronchiectasis.

Bronchoscopic Aspiration.

The pathological considerations referred to in the foregoing paragraphs give us an explanation of the remarkable results obtained, clinically, from bronchoscopic aspiration in certain cases. These results have amply justified the statement that the bronchoscope is the most efficient means yet discovered of combating stagnation of pus in the bronchi. The larger bronchi are quickly emptied with the aspirator. The "squeeze" of the thoracic compression of the lung during cough forces up the pus from the bronchioles and obstructed smaller bronchi, and the multiple minute pockets, into the larger bronchi, whence the aspirator can readily remove the pus.

Multiple foci of suppuration deserve separate consideration. Usually the separate foci can be reached in turn by the aspirator. If not, however, they may be fairly well drained by the squeezing due to the compression of the whole lung by the cough. This mechanism is endoscopically obvious during bronchoscopy in suppurative cases. The visible pus in the larger bronchi is removed by aspiration, and the bronchi are for a moment visibly clear of pus. The next cough forces up a quantity of pus from certain bronchi or fistulae. This in turn is aspirated. The next cough forces up more pus, but the quantity is less. This is aspirated, and is replaced by a still less quantity. This cycle is repeated until all the communicating cavities and fistulae are clear.

Summarizing, it may be stated that in any case of suppurative focus communicating with a bronchus, and in which the surgeon and the internist deem external operation not strongly indicated, bronchoscopic aspiration should be used to supplement medical care. A very satisfactory percentage of such cases will be cured. The chief contraindications to bronchoscopy are (1) a moribund condition of the patient, (2) imminent rupture of the focus into the pleura.

Suppurative Foci not Communicating with a Bronchus.—These can be penetrated with the bronchoscope if deemed advisable, but the wisdom of doing so has not yet been demonstrated. If for any reason the surgeon deems external operation inadvisable, bronchoscopic penetration may be considered. In such cases spontaneous rupture into the bronchus or the pleura usually occurs sooner or later, and delay in external operation is very rarely advisable.

EVOLUTIONARY FACTORS IN THE PRODUCTION OF PHARYNGEAL DIVERTICULA.

BY

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(Abstract.)

MR. NEGUS commenced by describing the site of exit of the pouches under consideration as between the lowest circular and adjacent oblique fibres of the inferior constrictor muscle of the pharynx. He referred to the importance of longitudinal muscle fibres in pulling the pharynx and oesophagus

* Abstract of "chalk talk" and cinema demonstration.