Lung Resection for Chronic Pulmonary Infection*

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The development of thoracic surgery under the leadership of a few men, such as Dr. Evarts Graham, has included the most important surgical advances of this period. Statements have been made to the effect that virtually all recent surgical advances are in the realm of thoracic surgery. In this field there are probably no greater successes than those obtained in the removal of portions of the lung for chronic pulmonary infections.

Bronchiectasis is the common condition which lends itself to surgical removal. However, other pulmonary infections that cannot be brought into this classification are also candidates for surgery. Certain cases of chronic lung abscess are best managed by removal of the diseased tissue. Indeed, there is but a fine differentiation between chronic multiple lung abscesses with bronchiectasis and chronic bronchiectasis with abscess formation. Similarly, chronic pulmonary infections with varying degrees of bronchiectasis, atelectasis, pneumonitis and abscess formation which do not clearly fall into the classification of either bronchiectasis or lung abscess, are subjects for lung removal. Also, there is a current trend towards lung resection in certain cases of pulmonary tuberculosis.

BRONCHIECTASIS

Bronchiectasis is a condition which, up to recent times, has had no satisfactory solution. In spite of periods of remission that may accompany medical treatment, the course has been practically always in a downward direction. Although a congenital type of bronchiectasis is well recognized, the acquired type is the one most frequently encountered. The factors in the development of bronchiectasis must include an infection which weakens the wall of the bronchus and a dilating force. In my opinion, bronchiectasis frequently develops as a sequela to atelectasis of the lung. The etiological factor then is any one of the many causes of atelectasis. The common development of bronchiectasis distal to bronchial obstruction influences me to believe that in many cases of bronchiectasis some form of bronchial obstruction was a very important factor in the etiology. Distal to the obstruction, infection fulminates resulting in weakening of the bronchial wall and absorption of the

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cartilage. The dilating force may be the accumulation of pyogenic materials or may be the atmospheric pressure acting against the negative intrathoracic pressure after the bronchus is reopened.

Bronchiectasis most frequently has its onset in the early decades, although symptoms may appear in any period of life. Sometimes there may be a definite incident following which symptoms develop, such as pneumonia, lung abscess, empyema, or aspiration of a foreign body. Again, there may be merely gradual development of symptoms. The usual story is one of frequent colds with cough and expectoration, which may be seasonal in character. Other symptoms, such as fever, night sweats, cardiac acceleration, weight loss, etc., may be present in varying degrees. Dyspnea, cyanosis, clubbing of the fingers may become evident in the later stages. Physical findings will vary with the extent and location of the involvement.

The final diagnosis, in general, depends on x-ray studies after the instillation of iodized oil. A thorough study must include the outlining of bronchial radicles to all lobes. This is particularly important if surgery is contemplated.

Every case of bronchiectasis should, I feel, be considered for possible lung resection. Unfortunately, however, many cases present themselves in a stage where because of age, general condition, and extent of involvement, surgery is out of the question. These patients can often be somewhat benefited by conventional medical measures, most important of which is faithful postural drainage. Others can be benefited by periodic bronchoscopic aspirations. Minor surgical measures, such as phrenic nerve operation, have been applied and, for a time, this procedure was quite widely adopted. The trend at the present time is to discourage the use of this operation in favor of more direct surgery.

In the light of our present knowledge, the only cure for bronchiectasis lies in the surgical removal of the diseased tissue. Results are often dramatic. For practical purposes, however, surgical measures are feasible only in those cases in which the disease is unilateral, especially when but a single lobe is involved. However, total pneumonectomy and multiple lobe resections have been performed successfully.

**CHRONIC LUNG ABSCESS**

Chronic lung abscesses of long standing, either single, multilocular or multiple, have, in general, no answer in medical treatment. The conventional thoracotomy for surgical drainage often has not produced satisfactory results. The etiological factor is any one of the causes of lung abscess. The reason for chronicity has often been failure of establishment of proper surgical drainage in the early stages. I believe that inadequate bronchial drainage is an important
factor in chronicity. An eventual cure can sometimes be accomplished by thoracotomy for drainage of these abscesses or by lung destruction after the manner of Graham's cautery lobectomy. If the patient's condition permits, however, I believe the procedure of choice is surgical removal of the diseased area.

OTHER CHRONIC PULMONARY INFECTIONS

I have recently encountered a number of cases that do not fall clearly into the classification of bronchiectasis or lung abscess. Symptoms are similar: cough and expectoration of purulent material, and manifestations of the infection, such as fever, weight loss, etc. Pathologic specimens reveal some degree of bronchial damage with bronchiectasis, atelectasis, pneumonitis and small abscesses.

Medical approach, including chemotherapy, has not favorably affected the infection or does not bring about a cure of the condition. As time goes on the pathology gradually extends. Here again, I believe, although the causative factor may not be clearly demonstrated, that there often is some mechanism in effect which interferes with bronchial drainage. After medical measures have proven unsuccessful these cases too should be considered for lung resection. The results may be highly successful.

Certain cases of pulmonary tuberculosis with bronchial occlusion have, up to the present time, presented an almost hopeless problem. Collapse measures have been ineffective and the clinical course almost uniformly progressively downwards. For this type of case lung resection seems to offer the only salvation. Very encouraging results have been reported, the most extensive work, to my knowledge, having been performed by Richard Overholt of Boston.

I have gone through the period of attempted resection of other tuberculous lesions, notably tuberculosis of the intestines, in which results were very discouraging; so that even though I have no great personal experience with lung resection for pulmonary tuberculosis, I believe such operations must be applied with extreme caution. However, I am sure that, in this particular type of case, surgical removal can justifiably be attempted and, with improved technic of these operations, may prove highly successful in a small group of cases.

A discussion of operative technique does not seem advisable at this time. The best description of the technique of lobectomy with which I am familiar is that given by Graham and Blades, published in The Journal of Thoracic Surgery. The best description of the technique of pneumonectomy with which I am familiar is that given by Rienhoff in the same publication.
Various types of chronic pulmonary infections are amenable to surgical procedures, removing the affected lung areas. Results may be dramatically successful and attainments can be favorably compared to those obtained by the most beneficial accepted procedures in present-day surgery.

Varios tipos de infecciones pulmonares crónicas pueden ser tratados por medio de procedimientos quirúrgicos, extirpando las zonas afectadas del pulmón. Los resultados pueden dar buen éxito en forma espectacular y pueden compararse favorablemente con los resultados obtenidos por los más beneficiosos procedimientos aceptados de la cirugía moderna.