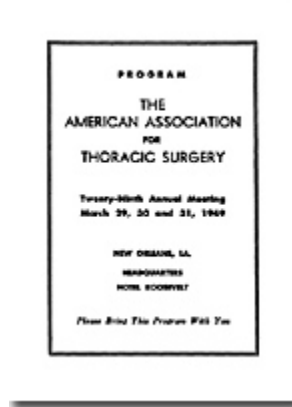


1949 ANNUAL MEETING PROGRAM



Tuesday Morning, March 29, 1949

9:00 A.M. Business Meeting.

9:30 A.M. Scientific Session.

1. The Surgical Correction of Constrictive Pericarditis.

EMILE HOLMAN, M.D., San Francisco, Calif.

In 265 reported operations for constrictive pericarditis 21 deaths occurred on the operating table, 49 deaths occurred in the early postoperative period, 118 cases were considered cured and 44 cases improved.

Although the thickness of the diseased pericardium varies considerably in different areas, a satisfactory and adequate pericardiectomy must include excision of the pericardium over the left ventricle, over the right ventricle and auricle, and over both vena cavae. The inferior cardiac border must be liberated by excision of the usually greatly thickened pericardium lying between the heart and the diaphragm. Failure to relieve constriction of the inferior vena cava may result in failure to correct ascites. Persistence of ascites following pericardiectomy is evidence of an inadequate decortication and demands reoperation and removal of more scar, rather than an omento-pxy or Talma operation.

To achieve the exposure necessary for an adequate inspection and decortication of the heart, a median sternotomy with transverse division of the sternum in the second interspace is recommended. The sternum is reapproximated by several stainless steel sutures inserted through bone, not through avascular cartilage.

The wound should be drained, preferably into the right pleural space from which the fluid can be removed either by aspiration or by intercostal drainage. (Paper illustrated by motion picture of three decortications-12 minutes).

2. A Method for Exposure of the Cardiac Septa.

F. D. DODRILL, M.D., Detroit, Mich.

A method has been used experimentally by which the chamber of the heart, either the right atrium or the right ventricle, is opened, the septum exposed for short intervals and the incision closed. An instrument has been made which consists of a ring clamp on the distal end. The clamp is used to bring the lateral walls of the atria in opposition to the septum. The incision is made within the ring which excludes the circulation from this area. Portions of the atrial septum have been excised and the defect closed. The exposure of the ventricular septum is more difficult but has been accomplished with the same instrument.

3. The Choice of the Side for Approach in Operations for Pulmonary Stenosis.

CONRAD R. LAM, M.D., Detroit, Mich.

The experience to be presented was gained in 42 operations on 41 patients with pulmonary stenosis. Blalock operations or attempts were carried out on 34 patients. Two of 5 failures to complete the operation were due to inability to approximate the right subclavian and pulmonary arteries. One of these patients subsequently had a successful modified Potts operation on the left side; an anastomosis was created between the lower branch of the pulmonary artery and the descending aorta. There were two deaths from hemorrhage following completed Blalock operations on the right side in which technical difficulties due to short subclavian arteries had been encountered. This experience has led us to follow the suggestion of Holman and plan all Blalock operations for the left side if the patient has a left heart, regardless of the position of the aortic arch. Twelve of 15 patients operated on since that decision was made have had left arches; all had good results and in no case was it necessary to sever the pulmonary artery proximal to the anastomosis in order to gain additional length.

The Potts procedure was planned for 10 patients, mostly small children. The operation was successful in five patients with left arches and in two with complete dextrocardia. The right approach was used with complete satisfaction in the latter. However, difficulties were encountered when this approach was used in three patients with right arches. In two, the Potts operation had to be abandoned because the aorta and pulmonary artery could not be approximated and unsatisfactory subclavian-pulmonary anastomoses were substituted. In the third, a poor aortic-pulmonary shunt was made with great effort, but the child expired. It is believed that Blalock operations on the left side would have been preferable.

In our hands, the best results have been obtained when the operative approach is on the side of the apex of the heart, regardless of the age of the patient or the position of the aortic arch.

4. The Surgery of Mitral Stenosis.

DWIGHT E. HARKEN, M.D., Boston, Mass.

The surgery of mitral stenosis is oversimplified when merely resolved to a discussion of regurgitation versus stenosis.

It has been found that 1) the heart must not be dislocated from the position of optimum function; 2) the direct surgery of the mitral valve is more readily accomplished by approaching the valve from above, through the auricle; 3) certain types of stenosis are better tolerated than others; 4) the heart rate alters the severity of the given lesions.

On the basis of these facts, different types of surgical procedures have been devised for different clinical and pathological categories of patients:

- A. Patients in whom the mechanical obstruction due to the stenotic valve is the outstanding feature. In these patients, cardiac output is low and does not go up with exercise. It seems logical to treat these by *valvulo-plasty*, i.e., enlarging the mitral orifice by cutting away the commissures. This allows some possible return of function with a minimum burden of added re-gurgitation.
- B. Patients who suffer from marked mitral regurgitation. The clinical symptoms here are predominantly due to pulmonary hypertension, with the aggravating effect of tachycardia causing frequent episodes of pulmonary edema (or, as we term it, pulmonary decompensation). These patients have a normal cardiac output that can increase with exercise. *Interatrial septal defects* have been created in two patients to decompress the left auricle and pulmonic bed during periods of stress.
- C. Patients so debilitated that they cannot be considered for direct cardiac manipulation and those who have episodes of tachycardia that produce pulmonary edema (pulmonary decompensation). Here, *cervicodorsal sympathectomy* may maintain a slower pulse rate and also eliminate various cardiopulmonary reflexes that may play a part in the production of pulmonary edema.

A plea is made that patients be selected and evaluated before and after operation by critical, objective methods, including cardiac catheterization.

This report comprehends a study group of 20 patients to date of whom five have been treated surgically. There has been one surgical death.

5. Surgery of Mitral Stenosis.

CHARLES P. BAILEY, M.D., M.Sc., F.A.C.S. and (*by invitation*), ROBERT P. GLOVER, M.D., M.Sc. and THOMAS J. E. O'NEILL, M.D., Philadelphia, Pa.

A. Historical review.

B. Modern concept of pathology and possibilities of altering the changes. This embraces the various shunt operations: (1) azygos vein-pulmonary vein anastomosis, (2) perforation of the interauricular septum, and (3) production of a tricuspid re-gurgitation. It also considers the various operations upon the mitral valve: (1) simple dilatation, (2) cutting across the valve cusps (3) excision of a portion of the valve ring (simple), and (4) directed excision of the valve-valvulo-plasty, and (5) commissurotomy under direct digital control.

Presented are 10 cases of commissurotomy for mitral stenosis, one case of digital dilatation of the valve, and one case of opening of the interauricular septum. Discussion of failures and successes will be directed toward better selection for surgery and better technique and management.

Tuesday Afternoon, March 29, 1949

2:00 P.M. Scientific Session

6. Total Failure of Sternal Fusion with Herniation of Pericardium.

HERBERT G. MAIER, M.D., New York, N. Y., and FRANK BORTONE, M.D., Jersey City, N. J.

A case of complete lack of fusion of the entire length of the sternum with herniation of the pericardium is reported. The congenital defect was successfully corrected by surgery in infancy. The importance of performing the operation very shortly after birth is well illustrated by our case.

The embryological development of the sternum is briefly reviewed. The relationship of cleft sternum and ectopia cordis is discussed.

Due to the lack of rigid thoracic cage at the site of the sternal defect, considerable paradoxical motion may occur with resultant respiratory and cardiocirculatory difficulty. If only a partial cleft sternum or a narrow sternal fissure is present, symptoms may be absent.

7. Angiocardiography and Aortography in the Diagnosis of Congenital Cardiovascular Lesions.

THOMAS H. BURFORD, M.D. and (*by invitation*) MERL J. CARSON, M.D.
and WENDELL G. SCOTT, M.D., St. Louis, Mo.

With the development of the tautography by one of our group (W.G.S.), the technique of cardiovascular visualization has become an invaluable and extremely accurate method of diagnosis in congenital lesions of the heart and great vessels. The intravenous injection of diodrast by this technique serves admirably to elucidate the type of deformity present in the heart. Retroarterial injection has proven equally valuable in clarifying anomalies of the aorta and its immediate branches.

The valuable procedure of cardiac catheterization is limited in application. The very young subjects in whom diagnostic difficulties are most commonly encountered have not been suitable subjects for catheterization in our experience. It is in this group that visualization is of the greatest value.

The procedure is of further value in that it affords accurate, pre-operative evidence of operability or inoperability in certain lesions, particularly coarctation of the aorta.

A relatively large experience is reviewed, with a description of the techniques and an appraisal of the results. (Lantern slides and a five-minute colored movie.)

8. Angiocardiography in the Diagnosis of Mediastinal and Paramediastinal Masses.

OSLER A. ABBOTT, M.D., Emory, Ga. and (*by invitation*) TED F. LEIGH, M.D.
and WILLIAM A. HOPKINS, M.D.

This presentation discusses the role which may be played by the use of diodrast visualization in evaluating mediastinal and paramediastinal tumors. The use of the angiocardiogram constitutes the main point of discussion, but the role of diodrast visualization of the innominate veins and superior vena cava are also discussed. The value of this technique in lesions of vascular origin is easily appreciated. Its value in non-vascular lesions is also stressed.

Unusual cases are presented, which emphasize the need for this method of investigation in the majority of mediastinal lesions. A case of congenital massive aneurysm of the superior vena cava is included in the presentation, and the successful method of operative correction presented. The importance of angiocardiography in different projections is also considered.

9. Anesthesia for Thoracic Surgery, A Study of the Effect of the Open Pleura on the Blood Gases.

HENRY K. BEECHER, M.D. (*by invitation*) Massachusetts General Hospital, Boston, Mass.

Abnormality in the blood gases (too low oxygen, too high carbon dioxide) is a common cause of disaster during thoracic surgery. Procedures in anesthesia must be designed to preserve these gases within normal limits. Our anesthesia practices are given with studies of the arterial blood in some forty patients during trans-pleural thoracic surgery.

10. Blood Volume Changes in Tuberculous Patients Treated by Thoracoplasty.

FRANK F. ALLBRITTEN, JR., M.D., JOHN H. GIBBON, JR., M.D. and (*by invitation*) HERBERT LIPSHUTZ, M.D. and BERNARD J. MILLER, M.D., Philadelphia, Pa.

A rising pulse rate and falling blood pressure has occasionally required the discontinuance of a stage of thoracoplasty in patients with pulmonary tuberculosis. This occurs more commonly in patients with far advanced bilateral disease and in the second and third stages of thoracoplasty. Although blood lost at operation was adequately replaced it occurred to us that an unrecognized diminution in circulating blood volume could account for these symptoms. It was conceivable that these chronically ill patients had a diminished blood volume on admission to the hospital and that there was an additional unrecognized blood loss into the operative wound between stages. The following study was made in order to obtain pertinent data.

Observations were made on ten patients with pulmonary tuberculosis treated by thoracoplasty. All had seven rib thoracoplasties. The plasma volume was determined by the method of Gibson and Evelyn. The blood volume was calculated from this figure and the hematocrit. The blood lost during each stage of thoracoplasty was measured by weighing sponges before and after use, and this estimation was compared with the difference in circulating blood volume before and after operation. The blood lost between the stages of thoracoplasty was taken as the difference between the blood volume at the completion of one stage and the blood volume immediately preceding the next stage.

With one exception, all patients in this series had a diminished blood volume prior to thoracoplasty, computing normal volume from surface area by the method of Gibson and Evans.

The operative blood loss during the first stage was found to be almost twice as much as that occurring at the second and third stages; averaging 832 cc. in the first stage, and 480 cc. and 397 cc. in the second and third stages, respectively.

A significant decrease in the circulating blood volume was found to occur in the interval between stages. Between the first and second stages the decrease in blood volume averaged 428 cc. and between the second and third stages it averaged 445 cc. Some of the decrease in blood volume between stages has been attributed to the extravasation of serosanguinous fluid into the large wound space which is created after the upper three to five ribs are resected. With the completion of a seven rib thoracoplasty, the scapula drops in to obliterate this space.

Patients with arrested disease following thoracoplasty regained and maintained a normal circulating blood volume.

These measurements indicate the advisability of restoring a normal circulating blood volume preceding a surgical procedure in patients with pulmonary tuberculosis, as well as adequate replacement of blood during operation and between stages of a thoracoplasty.

11. Pulmonary Circulation and Alveolar Ventilation-Per-fusion Relationships After Pneumonectomy.

A. COURNAND, M.D. and (*by invitation*) R. L. RILEY, M.D. and A. HIMMELSTEIN, M.D., New York, N. Y.

Fourteen patients ranging in age from 14 to 72 years were studied after pneumonectomy. The time since pneumonectomy was less than seven months in six cases and from two to eleven years in the remaining eight cases. The preoperative diagnoses included chronic pulmonary suppuration, tuberculous bronchial stenosis and carcinoma of the bronchus.

The pulmonary blood flow and pulmonary arterial pressure were measured at rest in eight cases and following exercise in four cases, using the technic of cardiac catheterization. The correlation between ventilation and perfusion was studied in all 14 cases by recently developed technics which involved the determination of pCO₂ and pO₂ in the arterial blood and the calculation of alveolar gas tensions. On the basis of these measurements it is possible to estimate the proportion of mixed venous blood which fails to pass through normally ventilated alveoli and to estimate the proportion of inspired air which fails to reach normally perfused alveoli. In all cases the studies were supplemented by the measurement of lung volumes, maximum breathing capacity, ventilation and gas exchange as previously reported.

Although the dynamics of the pulmonary circulation at rest were but slightly altered even in cases studied several years after pulmonary resection, there was invariably a significant degree of pulmonary arterial hypertension during moderate exercise. This finding is in contrast with observations in normal individuals during much more severe exercise (*Am. J. Physiol.* 152:372, 1948). Since the blood flow through the remaining lung during moderate exercise exceeded the flow through each lung of normal individuals during severe exercise, it cannot be stated whether the rise in pulmonary arterial pressure was due to pathological changes in the pulmonary vascular system or to the inability of the normal vascular bed of one lung to accommodate an unusually large blood flow. The relationships between alveolar ventilation and alveolar perfusion were normal in six cases. In the remaining eight there was evidence of perfusion of poorly ventilated areas and/or ventilation of poorly perfused areas. There was no consistent correlation between these changes and a) the type of disease prior to pneumonectomy, and b) the presence or absence of a thoracoplasty. In the older age group moderate emphysema invariably developed with evidence of ventilation of poorly perfused areas.

WEDNESDAY MORNING, MARCH 30, 1949

Wednesday Morning, March 30, 1949

9:00 A.M. Scientific Session.

12. The Surgical Management of Chronic "Spontaneous" Pneumothorax.

LYMAN A. BREWER, III, M.D., FRANK S. DOLLEY, M.D. and (*by invitation*) BYRON H. EVANS, M.D., Los Angeles, Calif.

A series of cases of chronic and recurring "spontaneous" pneumothorax is presented. "Symptomatic" pneumothorax occurring with well established pulmonary disease secondary to trauma, pulmonary abscess, infarct, tuberculosis and lung tumors has been excluded. Although there is a great controversy concerning the etiology of "spontaneous" pneumothorax, from the practical point of view we recognize three main conditions as causing the vast majority of these cases: 1) Congenital cysts, occurring most often in infants and children;

2) Pulmonary vesicles, secondary to localized subpleural pulmonary and bronchiolar scars occurring in young adults; and

3) Blebs or bullae of emphysema found in middle aged or older persons suffering from a more generalized form of pulmonary emphysema. Most cases of acute "spontaneous" pneumothorax can be successfully treated by conservative methods, which include bedrest, oxygen, and the adjustment of the intrapleural pressures to allow for the scaling off of the pulmonary aperture and the gradual expansion of the lung.

Chronic "spontaneous" pneumothorax presents a more difficult therapeutic problem. Surgical methods are indicated because conservative measures have failed. With surgery maximum pulmonary function is restored and chronic invalidism prevented.

The causes of the persistence of the pneumothorax are sometimes difficult to demonstrate. Most often, however, the etiologic factor is one of three main conditions: 1) Intrapleural adhesions, which exert a "guy wire" effect on the lung, holding it on a tension so that the lung cannot collapse sufficiently to allow the pulmonary opening to close;

2) Fibrosis about the opening in the lung or a congenital lesion lined by bronchial epithelium;

3) The formation of a pleural membrane as the result of the organization of fibrin deposits secondary to a pleural effusion. Because of the nature of the pathological processes, we believe that the introduction of irritating substances into the pleural cavity to produce a violent pleuritis is contraindicated. The surgical measures we have employed include:

1) Closed catheter pleural drainage; 2) Phrenic paralysis; 3) Thora-coscopy with internal pneumonolysis; and 4) Open thoracotomy.

Open thoracotomy permits the most complete and definitive attack to the problem, for at this operation four essential techniques may be employed: 1) Complete pneumonolysis; 2) Surgical closure of the pulmonary opening; 3) Resection of pulmonary cyst or bleb regardless of the type; 4) Decortication of the collapsed lung. This subject has received little attention in the medical literature. The authors wished to present their experience with the surgical management of 15 cases. The indications and results of the various surgical techniques are discussed and evaluated.

13. Segmental Resection in Pulmonary Diseases.

J. MAXWELL CHAMBERLAIN, M.D. and (*by invitation*) THOMAS C. RYAN, Commander, U.S.N., New York, N.Y.

One hundred segmental resections were done for tuberculous (25%) and non-tuberculous (75%) pulmonary lesions. The standard technique first suggested by Churchill was used in the majority of cases. The bronchus serving the diseased segment is defined and divided. Gentle traction on the bronchus soon discloses the companion vessels and the artery is ligated first. Only the tributaries to the vein are ligated, however, since it has been pointed out that the veins serve adjacent segments.

The indications for segmental resection in bronchiectasis are well known, but segmental resection in acute putrid lung abscess is usually contra-indicated. However, after chemo-therapy or surgical drainage of a lung abscess, a state of indolent chronicity may be reached and in such cases segmental resection becomes a sound surgical solution. The indications for segmental resection in tuberculosis are not well established, but it would seem that the small, discrete, isolated focus such as a tuberculoma or a small thick walled inspissated cavity are the two types of lesion most vulnerable to resection of a segment.

In comparison with the removal of a lobe the operating time and complications are moderately increased. Further, the postoperative care is more complicated and demands great vigilance. The results, however, seem to justify the continued use of this procedure. However, when only one segment of a lobe remains and this segment is a *small* one, a lobectomy may be the procedure of choice.

The various methods of segmental resection will be discussed and typical cases with broncho-spirometric studies will be presented.

14. Resection of Pulmonary Segments-Details of Technic and Recent Results.

RICHARD H. OVERHOLT, M.D., FRANCIS M. WOODS, M.D. and (*by invitation*) BEATTY H. RAMSAY, M.D., Brookline, Mass.

The operative procedure of segmental resection of the lungs has now matured. Nearly all the technical difficulties have yielded to improvements in technic until now it can be demonstrated that empyema, bronchopleural fistula, and difficulty with reexpansion of the remaining lung are uncommon and unexpected complications. It is our purpose to record the difficulties that have been encountered and to show how each may be best avoided. Detailed technical steps of the operation will be illustrated. Brief reference will be made to the use of segmental resection in pulmonary malignancy and tuberculosis. Finally, a report will be given on the postoperative course in all the segmental resections carried out during the past six months during which time technical maneuvers and management have remained unchanged.

15. Broncholithiasis.

HERBERT W. SCHMIDT, M.D. (*by invitation*) O. THERON CLAGETT, M.D.,
and JOHN R. MCDONALD, M.D., Mayo Clinic, Rochester, Minn.

The subject of broncholithiasis has been of interest to the medical profession for centuries. It has been said that the subject interested Aristotle some three hundred years B.C. In spite of this fact, we could find only seventy-eight cases reported in the English medical literature up to 1948.

We should like to report forty-two cases of broncholithiasis in our experience. In fourteen of these cases, the broncholith was removed at the time of bronchoscopy. In three, it was impossible to remove the stone at the time of endoscopic examination but the involved bronchus was dilated and the stone was coughed up immediately following the examination. Ten patients had pulmonary resections for indeterminate lesions which were proved to be due to broncholiths. The rest of the patients in this series had the history of having coughed up single or multiple stones. The clinical, bronchoscopic, pathologic and surgical aspects of broncholithiasis are discussed.

Broncholiths will be diagnosed with increasing frequency at the time of exploratory thoracotomy performed because of indeterminate pulmonary lesions. In this group it will usually be necessary to carry out a resection of a portion of the lung because primary bronchi-ogenic carcinoma in most instances cannot be excluded. Because of the pathology involved, we believe that as small an amount of lung tissue as possible should be resected at the time of surgery.

16. The Results of Surgery in Bronchiectasis.

ADRIAN LAMBERT, M.D., New York, N. Y.

The series representing an analysis of 106 consecutive operations on 103 patients for bronchiectasis, with and without acute sup-purative disease, and involving one or two lobes and an entire lung, is offered from the Chest Division of Bellevue Hospital during the years 1939 to 1945. Cases in which tuberculosis was demonstrated in the specimen removed have been omitted from this series. Similarly, cases in which the primary disease process was a lung abscess have not been included. The mortality in bronchiectasis with and without suppuration in one or two lobes and involving an entire lung is analyzed. The postoperative complications have been related to the operative technic and to the existing pathology in the specimen removed and the incidence of sputum related to the mortality in the four groups. The results include a follow-up of seventy-eight of the ninety-one survivals that were followed over an average period of four years. These have been classified according to the original pathology at the time of operation, according to associated sinus disease and bronchiectasis and according to postoperative residual stumps and the development of tuberculosis.

17. The Surgical Treatment of Bilateral Bronchiectasis.

FREDERICK G. KERGIN, M.D., Toronto, Canada

Fifty-eight patients have been treated surgically for bilateral bronchiectasis at the Toronto General Hospital and Hospital for Sick Children, Toronto. Of these, twenty-seven have had unilateral operations and thirty-one have had staged bilateral resections.

This group of patients has been subjected to ninety-four excision operations with four deaths, all following the second side of a bilateral resection. By attention to certain technical details, which are described, it has been possible to reduce the hazards of treatment. The last eighteen consecutive bilateral resections have been completed without mortality.

The results of treatment in relation to relief of symptoms and effect on exercise tolerance are discussed. Eighty-three percent of the patients who have had bilateral resection are symptom free and the remainder improved.

In this series partial lower lobectomy with preservation of the superior segment was done thirteen times. The results of this procedure are described.

Wednesday Afternoon, March 30, 1949

2:00 P.M. Executive Session.

3:00 P.M. Scientific Session.

Address of the President-EDWARD D. CHURCHILL, M.D., Boston, Mass.

18. Mediastinal "Tuberculoma"-Surgical Removal in Four Patients.

PAUL C. SAMSON, M.D., DAVID J. DUGAN, M.D., Oakland, Calif., and (*by invitation*) BRIG. GEN. LEONARD HEATON, U.S.A.

The scarcity of information in the literature concerning tuberculomas of the mediastinum prompts this report. Four patients have been subjected to surgery. The correct diagnosis was unsuspected in all prior to exploration. Various preoperative diagnoses were entertained: dermoid tumor; bronchiogenic cyst; intrapulmonary cyst; aneurysm. One patient was asymptomatic. In the others, symptoms ranged from vague thoracic discomfort to severe cough and dyspnea because of partial tracheal obstruction.

The tuberculin test was repeatedly negative in one patient and was positive only in 1-100 dilution in another. Tubercle bacilli were not recovered from any of the specimens. Pathologically, there were caseation, epithelioid tissue and multinucleated giant cells.

The discussion will include consideration of certain problems. 1. Are these "tumors" always due to tuberculous infection or may other organisms cause the pathological picture? 2. What steps may be taken preoperatively to establish more certainly a diagnosis of "Tuberculoma"? 3. When exploratory operation in a patient without symptoms reveals a caseo-granulomatous mass, should it be removed?

19. Pneumonectomy Followed by Immediate Thoracoplasty.

H. L. SKINNER, M.D., Medical Director, USPHS, New York, N. Y. (*by invitation*)

Pulmonary resection is rapidly assuming its proper place in the treatment of pulmonary tuberculosis. Amazing progress has been made in this field of surgery but certain complications arise from time to time which happens in any new, radical procedure. In order to circumvent these complications it has become routine practice in most thoracic clinics to follow pneumonectomy by one or two stages of thoracoplasty.

It is our opinion that it is still better to do a thoracoplasty immediately following pneumonectomy in certain selected cases. In doing the thoracoplasty the transverse processes and posterior rib stumps are not resected. The first rib is left in place and occasionally the second is left in place. We have been particularly impressed with the benign postoperative course. Report of cases with lantern slides demonstration. The procedure has the following advantages:

1. Necessity of only one operation.
2. Prompt obliteration of pleural cavity to lessen the danger of bronchial fistula and empyema.
3. Mediastinal displacements are avoided.
4. A more effective coughing mechanism is present in the immediate postoperative period.

20. Funnel Chest and Allied Thoracic Cage Deformities.

CHARLES W. LESTER, M.D., New York, N. Y.

A congenital shortening of the anteroposterior measurements of the diaphragm commonly produces a funnel chest deformity but may also produce other deformities of the thoracic cage associated with the funnel deformity or existing separately. These allied deformities consist, for the most part, of abnormal depressions, either unilateral or transverse, or abnormal protrusions of one or more ribs. During the past five years numerous thoracic cage deformities of diaphragmatic origin have been observed and 27 have been operated upon. Modifications of the procedures described by Brown have been employed for the funnel deformities. The others have required individualized operations. This experience has produced certain concepts regarding etiology, selection of cases for surgery, optimum age for operation, type of operation to be employed, complications and results. These are discussed.

7:00 P.M. Cocktail Party-Hotel Roosevelt.

8:00 P.M. Banquet-Hotel Roosevelt.

Thursday Morning, March 31, 1949

9:00 A.M. Scientific Session.

21. An Experimental Study of the Blood Supply of the Esophagus and its Relation to Esophageal Resection and Anastomosis.

JOHN SKEK, M.D. (*by invitation*), CARLOS PRIETTA (*by invitation*) and E. J. O'BRIEN, M.D., Detroit, Mich.

The esophagus of dogs was mobilized from the mediastinum and portions were resected. The cut ends were then anastomosed by using interrupted sutures of fine silk in two layers. It was likewise possible to remove the esophagus from behind the aorta and anastomose it in front of the aorta.

These experiments were carried out with much of the blood supply to the esophagus ligated. Still healing occurred regularly.

Injection studies were made of the esophageal blood supply under various conditions, and it becomes evident that the supply is much better than has been generally thought.

22. The Treatment of Short Esophageal Strictures by Resection and End-to-End Anastomosis.

WILLIAM M. TUTTLE, M.D. and J. C. DAY, Detroit, Mich.

It has long been thought that end-to-end anastomosis of the esophagus was not a safe or feasible procedure.

Within the past two years six patients, ranging in age from one to seventy years, with short esophageal strictures have been treated by resection of the stricture either completely or by a wedging type of resection and the normal ends reunited by interrupted sutures in two layers.

There has been a good functional result in each patient. In no instance has the anastomosis leaked.

23. Acquired Nonmalignant Esophago-Tracheobronchial Fistulas.

FRANK PHILIP COLEMAN, M.D., and GEORGE H. BUNCH, JR., M.D. (*by invitation*), Richmond, Va.

Malignant lesions account for the majority of acquired communications between the esophagus and tracheobronchial tree. The nonmalignant fistula may be caused by trauma, tuberculosis, syphilis, esophageal diverticula and pyogenic and fungus infections. Frequently, the underlying pathologic process cannot be ascertained at the time of operative closure of the fistula. The hopeless prognosis of bronchiogenic and esophageal cancer associated with esophago-tracheobronchial fistulas and the infrequency of acquired non-malignant communications between the esophagus and tracheobronchial tree have resulted in the accumulation of meager experience in managing this distressing complication of trauma and infection. To the seven case reports in the English literature of operative closure of esophago-respiratory fistulas, the authors have added four successful cases. The clinical features, preoperative care, problems of anesthesia, and surgical technic are emphasized. (Motion picture illustrating surgical technic.)

24. The Combined Abdominal and Right Thoracic Approach to Lesions of the Middle and Upper Third of the Esophagus.

EDWARD M. KENT, M.D. and SAMUEL P. HARBISON (*by invitation*), Department of Surgery, Pittsburgh School of Medicine, Pittsburgh, Pa.

Following Ivor Lewis' lead, a traumatic stricture of the upper two-thirds of the esophagus was successfully treated by resection and esophago-gastrostomy through the right thorax in August 1947. The ease with which the entire esophagus to the top of the thorax may be resected by this approach logically led to the development of the method for malignant disease. The operation is necessarily done in two stages, performed a week apart or at the same time. The abdomen is opened first and exploration carried out. If no metastases are present, the stomach is carefully divested of its entire blood supply save for the right gastric and right gastroepiploic arteries. Dissection is carried to the esophagus itself and an inch or so of this organ is freed up. In markedly debilitated patients who have complete obstruction, a jejunostomy may be established before closing the abdomen.

At the second stage the right thorax is entered posterolaterally by resection of a suitable rib. If operable, the lesion is mobilized widely after ligation of the azygos vein. The stomach is then delivered after enlarging the esophageal hiatus, resection is carried out and an esophagogastronomy accomplished. The principal advantage of the right approach lies in the absence of the aortic arch on this side; dissection does not have to be performed beneath it; and the resulting anastomosis, whether above or just below the arch, is not angulated as is the case on the left. Details and pitfalls of the method are described. It is believed that a better salvage of patients with esophageal malignancies will be obtained by this more direct approach to the lesion.

25. Packing of the Superior Mediastinum in the Treatment of Esophageal Varices Due to Portal Obstruction.

JOHN H. GARLOCK, M.D. and MAX SOM, M.D. (*by invitation*), New York, N. Y.

The authors submit a supplementary report on the original paper published in the Journal of the American Medical Association for November 8, 1947, at which time they reported two cases accorded this therapy. The idea is based on the supposition that by establishing a large area of granulation tissue external to the muscular layer of the esophagus at a distance removed from the seat of the varices there will develop a collateral circulation which will be outside of the esophagus, thereby taking the load off the venous pressure in the esophageal varices which lie in a submucosal position. On the basis of an experience with ten cases there would seem considerable justification for this procedure before the surgeon should consider the more extensive and more dangerous operation of portocaval shunt or splenorenal vein anastomosis. The authors will report in detail the history of ten patients, the longest follow-up being seven years.

26. Pulmonary Alveolar Adenomatosis.

H. BRODIE STEPHENS, M.D. and SIDNEY J. SHIPMEN, M.D., San Francisco, Calif.

Pulmonary alveolar adenomatosis, or jagziekte disease, has awakened increasing medical interest as the condition has been recognized in human beings. Long recognized as an endemic disease of sheep it has now been found to affect human beings more and more frequently. Nevertheless, until 1947, only twelve authentic cases were on record, only one of which was diagnosed prior to death, the case of Pierson, Holman and Wood, in which the diagnosis was made at operation.

In the case reported herewith it was possible to make the diagnosis before surgery, to confirm it by lobectomy and to bring about apparent cure.

Thursday Afternoon, March 31, 1949

2:00 P.M. Scientific Session.

27. Plastic Reconstruction of Tuberculous Bronchostenosis With Dermal Grafts.

PAUL W. GEBAUER, M.D., Honolulu, Hawaii

28. Pulmonary Resection of Metastatic Malignancy.

HAWLEY H. SEILER, Oteen, N. G. (*by invitation*)

29. Bronchiogenic Carcinoma-A Study of Full-sized Mounts in the Correlation of Pathological Characteristics and Clinical Manifestations in Resected and Non-Resected Tumors.

F. J. PHILLIPS, M.D., GEORGE M. BOGARDUS, M.D. (*by invitation*), GLAIR E. BASINGER, M.D. (*by invitation*) and W. E. ADAMS, M.D., Chicago, Ill.

The controversy among clinicians and pathologists regarding the pathogenesis of primary carcinoma of the lung stimulated us to make and study full sized mounts of representative cross-sections of all tumors of the lung removed. An attempt was made to correlate the type of tumor, the site of the tumor and the size of the tumor with the clinical manifestations as demonstrated by history, physical and radiologic and bronchoscopic examination and findings at exploration. The cell type has been studied in its relationship to the site and size of the tumor, the rate of growth, the extension into contiguous tissues and metastases to other organs. Of the forty cases thus studied, 27 were found to be of squamous cell type with or without pearl formation and 13 exhibited both epidermoid and adenocarcinoma.

A similar study was made of 36 nonresectable tumors and 36 unexplored cases in which tumors were found at autopsy. Of the nonresectable group, approximately half were of an undifferentiated cell type. The other half were of a nonkeratinizing squamous cell variety. Of the tumors studied from autopsy specimen, 15 were adenocarcinoma, 14 were undifferentiated cell, 6 were epidermoid and 1 a mixture of adeno and squamous cell carcinoma. Illustrations of the above factors are presented and their significance discussed.

30. The Management of Chylothorax.

RICHARD H. MEADE, JR., M.D., JEROME R. HEAD, M.D., and CHESTER W. MOEN, M.D. (*by invitation*), Grand Rapids, Mich.

Although chylothorax is often associated with an incurable disease, or with severe injury, it may occur as a result of mild trauma. In most instances, untreated chylothorax results in death. Experimental work and clinical experience have proven that the thoracic duct can be safely ligated. Anatomical studies show that there is a wide variation in its gross structure, and that there may be only one duct, or there may be a number of minute ones. Chylothorax can be cured by ligation of the thoracic duct, but it may also be controlled at times by repeated aspirations, or by suction drainage. A general discussion of the anatomy of the duct, and of the physiological effects of its ligation will be given. Three cases will be reported illustrating different etiological factors, and different, successful methods of treatment. Chylothorax should rarely be fatal if recognized in time and properly treated.

31. The Surgical Treatment of Round Tuberculous Lesions (Tuberculomata).

HUGH W. MAHON, Colonel, M.C. (*by invitation*), and JAMES H. FORSEE, Colonel, M.C., Fitzsimons General Hospital, Denver, Colo.

This paper deals with a group of 35 patients treated by pulmonary resection, either lobectomy or wedge shaped excision, for so-called tuberculomata at Fitzsimons General Hospital. The clinical manifestations were generally characterized by minimal symptomatology and the solid-like found shaped lesion was often detected by routine X-ray examination of the chest. The similarity to other lesions, in particular coccidioidomycosis and neoplasms is discussed. In approximately 80 percent exploratory thoracostomy was necessary as an aid in diagnosis but a positive diagnosis was not established until histopathologic and bacteriologic examinations were completed. The pathology of this lesion is discussed in detail including a correlation of the radiological appearance with the gross and microscopic pathology. The hazards of considering this lesion as benign or arrested tuberculosis is emphasized. Our policy of management after operation has been largely determined by bacteriologic and histopathologic findings. Those patients in whom tubercle bacilli were demonstrated were advised to follow a period of hospital management of six to twelve months or longer. In those patients in

whom tubercle bacilli were not demonstrated in the tuberculoma and in whom daughter tubercles were absent and who had no other lung pathology were returned to military duty or to their normal activities in approximately three months after operation. A follow-up study of these patients is presented.

32. Transthoracic Thyroidectomy.

HERBERT D. ADAMS, M.D., Boston, Mass.

Intrathoracic goiter may be defined as goiter in which the goitrous mass lies in the mediastinum entirely below the level of the superior thoracic strait. At the Lahey Clinic nearly 28,000 patients with goiter have been operated on and hundreds of these goiters have been classified as being truly intrathoracic by these criteria. Practically all of these, many of tremendous size, have been removed satisfactorily by the cervical route. This has been technically possible chiefly by a maneuver described by Doctor Lahey of evacuation of the necrotic and colloid central portions of these masses, thereby permitting the capsular portions to be delivered from the mediastinum. This has been technically feasible and satisfactory in by far the majority of cases. However, there have been three cases in which the intrathoracic goiter has been removed by the transthoracic route. Two patients were operated on transpleurally because of inability to differentiate by roentgenologic and other studies the mediastinal shadow from other types of mediastinal tumors, and because of their extremely low position in the mediastinum. This differential diagnosis is discussed fully. The third case was done transpleurally because an attempt had been made elsewhere to remove the goiter through the neck, with failure due to the extreme vascularity and size of this goiter. The surgical management and technical aspects of transthoracic thyroidectomy are presented.

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