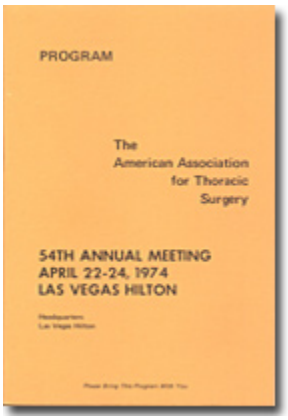
1974 ANNUAL MEETING PROGRAM

Back to all Annual Meeting Programs



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Back to Annual Meeting Program

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MONDAY MORNING, APRIL 22, 1974

Back to Annual Meeting Program

8:30 A.M. BusinessSession (Limited to Members)
Ballroom
8:45 A.M. ScientificSession
Ballroom

1. Comparative Study Between Ball and Disc Prosthesesin Mitral Valve Replacement

ALEJANDRO ARIS,* ALFRED J. FAST,* ALFREDJ. TECTOR,*
ROBERT J. FLEMMA and DERWARD LEPLEY,
Milwaukee, Wisconsin

A total of 196 patientsunderwent isolated mitral valve replacement between November, 1967 andDecember, 1972. From 1967 to 1970, the cloth covered Starr-Edwards metal ballprosthesis was used in 87 patients. Two-thirds received the Model 6600 whilethe remaining one-third received a newer model, 6310, with compositeconfiguration. One hundred, nine patients received the Bjork-Shiley tiltingdisc valve between 1970 and 1972. Computerization of all patients provided a92% follow-up. In order to make fair comparison between the two types ofvalves, only the postoperative period up to 36 months was considered in eachgroup (mean 21 months). Hospital mortality was 25% (21 patients) with The ballvalve, 3.5% (4 patients) with the disc valve. This difference was derivedmainly from the improvement in surgical technique and postoperative careinitiated in 1970 when the ball valve series was concluded. Late mortality was15% (10 patients) with the ball valve and 4.7% (5 patients) with the discvalve. Ball valve thromboembolic complications occurred in 9% (6 patients) and4.7% (5 patients) in the disc valves; while prosthetic enocarditis developed in12% (8 patients) and only 0.9% (1 patient) respectively ($p<0.001$).Postoperative cardiac catheterization was performed in 1 7 patients. Bothprostheses functioned well, with an equal decrease in pulmonic artery pressuresand capillary wedge pressure. However, the mean decrease in gradient across thevalve was 19.3 mm Hg with the disc prosthesis as opposed to 7.5 mm Hg with theball prosthesis ($p <0.05$). Quality of life among survivors was improved inover 90% of the patients in both groups. In view of the above results, theauthors feel the Bjork-Shiley valve offers a significant improvement in thelong term outlook of patients requiring mitral valve replacement.

2. Tricuspid Annuloplasty - A Five-YearExperience With 78 Patients

ARTHUR D. BOYD,RICHARD M. ENGELMAN,* O. WAYNE ISOM,*
GEORGE E. REED and FRANK C. SPENCER, New York, N.Y.

Seventy-eight tricuspid annuloplasties (TA) wereperformed for Tricuspid Insufficiency (TI) at the New York University MedicalCenter between January 1968 and July 1973. During this same

period ninetytricuspid valve replacements were performed. Sixty-three TA's were performed inpatients having mitral valve procedures and 15 in patients having mitral andaortic valve procedures. TI was not recognized preoperatively in 41% of thepatients having TA's, emphasizing the importance of routine digital palpationof the tricuspid valve. The TI was severe in 25 patients (32%), moderate in 38(49%), and mild in 15 (19%). In 77% of the patients, the right atrial andventricular pressures were elevated at pre-operative catheterization. Thehospital mortality in the 78 patients was 14%.

Digital examination at operation following annuloplasty found a trace ofresidual TI in 14 patients (18%), while the other 64 (82%) had no palpableinsufficiency. Subsequently 5 patients (6%) had a recurrence of significant TI.It seemed significant that in all of these a mitral valve operation wasunsuccessful, resulting in elevated right sided pressures which contributed tothe failure of TA.

Our operative technique for evaluating the tricuspid valve, guidelinesfor choosing between annuloplasty and replacement and our technique forannuloplasty will be discussed. The long-term results in these 78 patients willalso be presented and compared with those in patients having tricuspid valvereplacement.

3. Allograft Cardiac Valves: A View Throughthe Scanning Electron Microscope

JOHN W. HAMMON, JR.,* MICHAEL J.O'SULLIVAN,*
JAMES OURY,* and RICHARD G. FOSBURG, SanDiego, California

The clinical feasibility of implanting cardiac valvular allografts hasbeen well established. Experimental studies have shown subtle degenerativechanges in cardiac allograft valves and have linked them to rejection, traumaand poor preservation,. It was the purpose of this study to examine canineallograft cardiac valves to more accurately assess the changes that occur afterimplantation.

Canine aortic valves were sterilely removed andmounted on dacron covered metal support frames. They were then sterilized byimmersion in nutrient media containing antibiotics. Twenty-five valves wereallowed to stay in tissue culture media two to seven days. Fifteen freshallograft valves were then implanted into the mitral position in mongrel dogs.Valve function was assessed by regular cardiac catheterization andventriculography. Animals were sacrificed at 3, 6, and 12 months. The valveswere tissue cultured and studied with light and scanning electron microscopy.The remaining 10 valves served as controls. Transvalvular gradients averaged 8mm. Hg. and did not increase with implantation time. Ventriculographydemonstrated 1+ insufficiency in 2/15 valves, which was present from the timeof implantation. All fresh valves were viable, by tissue culture, during theperiod of observation. Leaflets became grossly thickened and stiff by one year.Light microscopy demonstrated areas of cell necrosis and fibrous dys-plasiawhich increased with implantation time. Scanning electron microscopy showedthat as implantation time lengthened the surface of the leaflet wasincreasingly irregular with areas of disrupted endothelium. These areascontained collagen fibers which were partially covered with a pseudoendotheliumof platelets, fibrin, red and white blood cells. By one year greater than 60%of the leaflet surface was denuded of endothelium and replaced by thepseudoendothe-lial matrix.

The results of this study suggest thatfresh preserved canine cardiac valvular allografts undergo changes in theirarchitecture after in vivo function. These changes includedisruption of the surface endothelium which is best appreciated with the use ofthe scanning electron microscope. These changes raise pertinent questions aboutthe long-term function of cardiac allograft valves.

4. A Six-Year Study ofGlutaraldehyde-Preserved Hetero-graft Valves

ALAIN CARPENTIER,* A. DELOCHE,* J.RELLAND,* and
CH. DUBOST,* Paris, France

Sponsored by James R. Malm, New York, N.Y.

In March 1968, we introduced the use of Glutaraldehyde as a cross-linkingfactor in the preparation of heterograft valves. Glutaraldehyde markedlyreduced the antigenicity of the graft while increasing the stability of theCollagen.

The first 100 patients operated upon between March1968 and December 1972 have been reviewed. 17 patients had congenital valvularmalformations (7 Ebstein's malformation, 4 Pulmonary Valve Atresia, 3 Truncus,3 Mitral). The remainder had acquired valvular disease. The latter groupcomprised 30 aortic, 19 mitral and 34 double or triple valvular diseases.

The hospital mortality was 6% in the single valve replacement group and14.5% in the multiple valve replacement group. Two cases of acute bacterialendocarditis occurred postoperatively. Only

one late death was valve related. 4valve dysfunctions were successfully reoperated at 4, 4.5 and 5 years followingoperation (3 mitrals and 1 aortic). Histological examination revealed theabsence of immunological reaction and scarring. Cusp perforations were presentin all four due to localized areas of collagen degeneration. 77 patients (85%)had excellent valve function. Hemodynamic data is available in 17 patients. Nothrombo-emboic complications were observed.

These results confirm the view that the method of valve preparation andstorage is critical to long term function, as indicated by the low failure ratein the present series compared to previous reports.

5. Long-Term Evaluation of Tissue Valves

MARION ION IONESCU,* BROJESH C.PAKRASHI,*
DAVID A. S. MARY,* IVAN T. BARTER,* andGEOFFREY H. WOOLER,*
Leeds, England

Sponsored by Dwight C. McGoon, Rochester,Minn.

Valve replacement with frame-mounted, three-cusp tissue valves wasperformed in 267 patients (150 aortic, 110 mitral and 7 tricuspid). Autologousor homologous fascia lata was used in 144 patients (follow-up 6-60 months)while 123 had heterologous pericardial valves (follow-up 6-36 months).

Myocardial failure was the main cause ofhospital and late mortality. Infective endocarditis contributed to morbidityand mortality early in the series.

Graft failure occurred in 6.3% of mitralpatients, all with fascial valves. None of the aortic or tricuspid grafts havefailed.

Regurgitant murmurs appeared in 34.5% ofmitral patients (the great majority with fascial valves) but only 9.5% haveincreased in intensity. In the aortic position 9.6% have diastolic murmurs(2.7% with pericardial grafts); 3% have haemodynamic significant regurgitation.

There were 7 thromboembolic episodes (5transient). Anticoagulants were not used.

81.3% of mitral and90.8% of aortic patients are in Grade I (N.Y.H.A.).

There have not been graft relatedcomplications in the tricuspid group.

Results of clinical, haemodynamic,angiographic and experimental studies are discussed.

Fascial valves have performed better inthe aortic than in the mitral position. Pericardial valves, irrespective of thesite of implantation, have shown much better results, in all respects, whencompared with fascial valves.

6. SubannularAneurysm Associated With Acute Massive Aortic Insufficiency

AGUSTIN ARBULU and NORMAN W. THOMS,*
Detroit, Michigan

Since January 1970, we have operated upon twelve patients with acutemassive aortic insufficiency associated with subannular aneurysms. Elevenpatients had recovered from a gram positive acute bacterial endocarditis. Onepatient was operated upon while the infection was still active. Only one hadprevious heart disease. Five were drug addicts. All patients were in functionalclass IV.

At operation we found massive destruction of one tothree aortic leaflets. The subannular aneurysm was located below the junctionof the right and the non-coronary aortic cusps in nine patients. In one, theaneurysm was below the left aortic cusp and two showed two and three subannularaneurysms, respectively. The aneurysms contributed to the massive aorticinsufficiency in all the patients. One aneurysm was calcified. In eightpatients we closed the orifice of the aneurysm with pledgeted sutures and usedthis closure as the seat of the aortic prosthesis. In two of these patients,the sutures pulled through the margin of the aneurysm resulting in aperivalvular leak. One was reoperated upon and died. The other is alive andfree of symptoms. In another patient the pledgeted sutures tore through theannulus which led to a fatal perivalvular leak. In four patients we patched theopening of the aneurysm prior to insertion of the prosthesis; none hadcomplications. Nine patients survived the operations.

We recommend: (1) that the aneurysms be patched rather than simply closedwith pledgeted sutures prior to the insertion of the aortic prosthesis; and (2)that the sutures holding the aortic valve be passed externally and pledgetedfrom outside the aorta.

7. The Treatment of Muscular SubaorticStenosis

WILFRED G. BIGELOW, A. S. TRIMBLE, E. D.WIGLE,*
A. G. ADELMAN,* Toronto, Ontario, Canada,

and C. H. FELDERHOF,* Halifax, NovaScotia, Canada

There have been two principle surgical techniques in common use for thecorrection of muscular subaortic stenosis. One is a transaortic myotomy withlimited muscle resection. The other is a more radical resection through aventricular incision.

Recently mitral valve replacement has been recommended as treatment basedon the observation that the anterior leaflet of the mitral valve contributes tothe ventricular outflow obstruction. Although successful the latter techniquedoes not correct the essential pathology and exposes the patient to a moreserious operation with a permanent threat to his well being.

It wasconsidered timely to review the results from the simpler ventriculomyotomy.Thirty-eight cases from a total of 95 studies were selected for surgery basedon a natural life history study and their response to Propranolol. Trans-aorticventriculomyotomy was carried out with 3 hospital deaths all occurring before1965. There were no deaths in the last 25 operations.

Of 35 survivingpatients 80% have shown symptomatic improvement. Postoperative studies in 19revealed that a successful ventriculomyotomy abolishes the abnormal anteriormitral leaflet movement, the outflow obstruction and related mitralregurgitation. Left ventricular end-diastolic pressure decreased in 15 of 19patients.

Simpleventriculomyotomy with limited resection of muscle is effective in muscularsubaortic stenosis and is indicated in symptomatic patients not responding toPropranolol.

8. More Than Five Years' Experience With theBjork-Shiley Tilting Disc Valve in Isolated Aortic Valvular Disease

VIKING O. BJORK, AXEL HENZE,* and ALF HOLMGREN,* Stockholm, Sweden

Of 400 consecutive aortic valve replacements, 161 patients were followed2 to 5 years. Early mortality, 5% late accumulated mortality, 10%, was neitherdue to mechanical failure nor thromboembolism. Postoperative results werejudged from 100 aortografic examinations and 90 transseptal catheterizations atrest and exercise. All patients were re-examined, 80 of them twice. Pressureload was eliminated in aortic stenosis and volume load in aortic insufficiency,where congestive heart failure and pulmonary hypertension were eliminated.Clinical improvement was sustained during the entire follow-up as judged byremaining improvement in working capacity and heart volume. Five patientsrequired re-operation for paravalvular leakage. No thromboembolic complicationsoccurred in patients on anti-coagulation. Patients over 60 years of ageencountered the same improvement as younger patients. Hemoglobin concentrationand serum iron was within normal range despite absence of iron substitution.The rheology of the Bjork-Shiley prosthesis is favourable even in smallersizes. Valve replacement is eliminating the volume load without adding apressure load. Due to its non-overlapping disc it combines a minimum ofturbulence and mechanical crushing resulting in low hemolysis.

11:15 A.M. Presidential Address

Lyman A. Brewer, III
A HERITAGE AND A CHALLENGE

*By invitation

MONDAY AFTERNOON, APRIL 22, 1974

Back to Annual Meeting Program

2:00 P.M. ScientificSession

Ballroom

9. Pharyngoesophageal Dysphagia and RecurrentLaryngeal Nerve Palsy

ROBERT D. HENDERSON,* ANDREW BOSZKO,*

JOHN DESLAURIERS,* and A. W. PETERvanNOSTRAND,*

Toronto, Ontario, Canada

Sponsored by F. G. Pearson, Toronto,Ontario, Canada

Recurrent laryngeal nerve palsy results in vocal cord paralysis. In agroup of 18 patients with palsy, it was noted that 14 of these patients, inaddition, developed the symptoms of pharyngoesophageal dysphagia. Thesepatients had the sensation of sticking to liquids or solids at thepharyngoesophageal junctions and many developed a cough with swallowing,secondary to aspiration of food. Fifteen of 18 patients had bronchogeniccarcinoma with the recurrent nerve palsy being secondary to carcinoma orfollowing deliberate resection of the nerve at lung resection. In 1 patient theaetiology of recurrent nerve palsy was considered to be viral and in 2 it wassecondary to thyroid surgery.

The obstruction produced aspiration and lung infection in 3 cases andpharyngoesophageal myotomy was necessary to correct the swallowing problem. Inall 3 cases, the dysphagia was corrected. These patients have been studied bybarium swallow, esophageal motility and esophagoscopy.

Five autopsy specimens have been examined and, in each, branches of therecurrent nerve were traced to the cricopharyngeal muscle. The significance ofthis symptom, in producing respiratory infection in pneumonectomised patients,is demonstrated and cricopharyngeal myotomy has been shown to correct theproblem.

10. A Simple Physiological Diaphragmatic HerniaRepair

VICTOR H. KAUNITZ, Kenmore, N.Y.,

LEONARD A. KATZ,* DAVID VASTOLA,* and

LOUIS MAAS,* Buffalo, New York

Because of the unacceptably high recurrence of current diaphragmatichernia

repairs, utilizing the fundal plication principle (10 to 15% in Belseyoperations), a different technique of repair has been developed. An attempt ismade to restore normal anatomy, and, thereby, normal physiology, by placingholding sutures in strong gasteric wall, immediately below thecardio-esophageal junction, and securing these sutures to tendon of diaphragm.The lower esophageal sphincter (LES), is, thereby, repositioned within theperitoneal cavity, without creating any unnecessary flap valve mechanism. Byusing the strong gastric wall, rather than the weak esophagus, for the basicrepair sutures, it is hoped that recurrence will be greatly minimized. To date,with the longest follow up 2 ï¿½ years, there has been no recurrence in 60patients.

The effectiveness of this simple technique in preventing gastric refluxhas been confirmed clinically, and by laboratory data. All patients have hadcomplete subsidance of reflux symptoms. Pre-operative, and 3 month post-operativemotility and reflux studies were done in a consecutive group of 23 patients.Lower esophageal sphincter (LES) activity, esophageal peristalsis, acid refluxand acid clearing were measured. Sixteen of 23 patients (70%) had low (10mms.Hg. or less) LES pressure. Following surgery, 92% of LES pressures rose. Meanpre-operative LES pressure was 6.6 mm. Hg.; mean post-operative pressure was12.9 mm. Hg. ($p < .005$). Sixty-five per cent of 20 patients measuredpre-operatively, had gastric reflux; post-opera lively 90% showed no reflux.

11. The Use of Circular Myotomy to FacilitateResection and End-to-End Anastomosis of the Esophagus: An Experimental Study

JESSADA MUANGSOMBUT,* JOHN R. HANKINS,*

and JOSEPH S. McLAUGHLIN,
Baltimore,Maryland

Segmental resection of the thoracic esophagus with end to end anastomosiscarries a lower mortality rate than esophagogastrostomy or colon interposition.However, if more than a few centimeters are resected, the anastomosis failsbecause of tension. Presented is an

experimental study in which circularmyotomy was utilized to reduce tension and thereby increase the amount ofesophagus which could be resected successfully.

Sixteen dogs were first subjected to end to end anastomosis withoutmyotomy after resection of segments varying from 4 to 7 cm. in length andcomprising 20 to 40% of the esophagus. Of 9 animals in whom less than a thirdof the esophagus was resected, 6 survived. However, of 7 animals in whom morethan 33% of the esophagus was resected, only 3 survived.

Initial attempts at circular myotomy performed 3 cm. proximal to theanastomosis after resection of 40 to 50% of the esophagus failed because ofischemia leading to anastomotic breakdown. Latex injection studies demonstratedthat the myotomy interrupted important vessels running longitudinally in thedeeper layers of the muscularis. Subsequently, it was found that partialmyotomy afforded just as great a reduction in tension without compromising theblood supply. Partial circular myotomy permitted successful anastomosis in 8 of10 animals in whom 45 to 55% of the esophagus was resected.

It is concluded that partial circular esophageal myotomy affords areduction in tension without interruption of blood supply and thus permitssuccessful anastomosis after resection of much longer segments than wouldotherwise be possible.

12. The Value of Resection in Tumors Involving theChest Wall

RALPH J. BURNARD,* NAEL MARTINI,*

and EDWARD J. BEATTIE, JR., New York,N.Y.

68 cases of chest wall resection for malignant tumors are reviewed. Thesecases cover the period 1962 through 1972. The patients ranged in age from 11 to76 years and included 43 males and 25 females. 50% of the patients presentedwith local symptoms and 30% exhibited a visible or palpable mass. Radiographicexamination revealed soft tissue density in 65% and bony erosion in 55%.

Histologic types consisted of 30 primary lung carcinomas, 6

metastaticcarcinomas, and 32 primary sarcomas.

The resected specimen generally included 3 to 4 ribs and produced a chestwall defect of approximately 125 cm^. Skeletal reconstruction was accomplishedwith marlex mesh in 46 cases, ox fascia in 7 and by other methods in 3. Noskeletal reconstruction was used in 12 cases. The majority of the casesrequired little or no major cutaneous reconstruction.

The operative mortality was 10%. 50% of the patients developed some formof cardiopulmonary complications. Of these, 60% were pulmonary, 30% infectious,and 10% cardiovascular. The relationship between preoperative radiation therapyand surgery is discussed. 20 patients required tracheostomy for varying periodsof time, only 4 of which were considered emergencies. 15 patients requiredrespiratory support for 24 hours or more. The median hospital stay was 16 dayswith a range of 8 to 108 days.

24 patients survived for two or more years. The value of chest wallresection is discussed relative to morbidity, mortality, palliation andsurvival following the procedure. Observations on methods of skeletal andcutaneous reconstruction are presented.

13. Treatment of Thoracic Outlet Syndrome byRemoval of First Rib and Related Entrapments Through A Posterolateral Approach:A 22-Year Experience

CLIVE R. JOHNSON, Fort Worth, Texas

Since February 4, 1952, 110 operations on 100 patients have beenperformed (bilateral in 10). Periosteum of first rib with insertions of scalenemuscles were removed. In addition to the first rib, 58 related entrapments ofbrachial plexus and related vessels in 63 operations required correction: (1)cervical rib - 13; in 6 of these a fibromuscular band extended from tip of ribto area first rib anteriorly; (2) deformity one or both first and second ribs -7; (3) fibromuscular band in absence of cervical rib - 9; (4) hypertrophy orabnormal anatomical relationship scalene muscles - 9; (5) cicatricial changesusually with periosteal proliferation and ossification in some involvinginsertions scalene muscles - 13; (6) miscellaneous - 7. Twenty patients

werereferred having had previous surgery without benefit. No operation wascomplicated. There was no injury to brachial plexus, subclavian artery or vein.Postoperative course was satisfactory in all patients, there beingcomplications in four, all minimal and manageable. Current followup wasavailable in 85 patients. In 79 excellent results have been maintained withimprovement in 5. One patient expressed no benefit. Subjective manifestations,although variable, are recognizable and there is adequate objectivity foraccurate evaluation and assessment for surgical indication. Oscillotonometricrecording of radial pulse during outlet maneuvers, electromyographic testingand cinegraphic study of coronary arteries have been helpful. The chest paincomponent of the syndrome with the arm pain accounts for applicability of thelatter. This program has been gratifying. It probably represents an endeavor,however, not generally as well acccpted as deserved. Encouraged by severalclinical associates involved in this experience, a report of it is submitted.

14. Primary Breast and Lung Carcinoma in the SamePatient

WILLIAM G. CAHAN, EL B. CASTRO,*

and ANDREW G, HUVOS,* New York, N.Y.

From 1949 to 1970 at Memorial Sloan-Kettering Cancer Center, there were33 patients who had separate primary cancers of both breast and lung.

There were 30 females and 3 males with anaverage of 62 years. Eleven primary lung cancers (34%) were asymptomatic anddiscovered by follow-up chest x-ray; in 6 others, these were discovered atautopsy.

In 26, the lung cancers were foundsubsequent to the breast cancer; in 7, they were synchronous with it.

During the same period, there were 22 solitary breastcancer metastases. Therefore, in this clinical setting, there is

about an equalchance that a solitary lung shadow may be either a new primary lung cancer(56.8%) or a breast metastasis. As the treatment of breast and lung cancer isdifferent, it is mandatory to establish the correct diagnosis. Occasionallythis can be done by cytology but usually an exploratory thoracotomy and biopsyare required for pathological confirmation. In addition, at that time,appropriate therapeutic measures may also be carried out.

Seven patients (21%) survived two or moreyears and one survived five years following resection of lung cancer. Incontrast, 10 out of 13 patients who had irradiation only, died within one year;none survived beyond two years.

Although these figures do not appearencouraging, in part this could be attributable to the delay in detecting andtreating the second cancer.

Implicit in this study is the need fordiligent follow-up of-breast cancer patients at regular intervals includingperiodic postero-anterior and lateral chest x-rays, for the earlier a cancer isdetected, be it a new primary or a metastasis, the better the chance for itscontrol.

15. Bronchoplasticand Conservative Resective Procedures for Bronchial Adenoma

ROBERT J. JENSIK, L. PENFIELD FABER,

CHARLES M. BROWN,* and C. FREDERICKKITTLE,

Chicago, Illinois

Recent "reports in the literature have suggested an aggressive, moreradical resection for bronchial adenoma.

We feel the surgical approach should be planneddepending upon the anatomic position and the histologic type of adenomaencountered, believing the carcinoid variety lends itself to conservative orbronchoplastic procedures. Pulmonary parenchyma is salvaged and cure rates arecomparable to reported series of carcinoid adenoma treated by conventionalresection.

Conservativeresection was accomplished in 22 individuals of a group of 32 patients withcarcinoid adenoma seen over the past 17 years. Eight patients had sleeveresection of either the lobar (6) or stem bronchus (2), and two patients hadlocal bronchotomy excision. All would have required pneumonectomy byconventional resection standards.

Sleeve segmentectomy was carried out in two otherswith anastomosis of the basilar bronchus to either the bronchus intermedius orleft main bronchus preserving the major portion of the lower lobe.

Segmentectomy done in 10 others salvagedsubstantial portions of the involved lobe.

Survival rate by actuarial methodapproaches 90% over this 17-year period, and local recurrence has not been seenin any patients undergoing conservative procedures.

Specialemphasis will be directed toward the various types of bronchoplastic proceduresperformed and the results.

16. Long-Term Results of Surgery for BullousEmphysema

MUIRIS X. FITZGERALD,* Boston, Mass.,

PATRICK J. KEELAN,* Dublin, Ireland,

DAVID W. CUGELL,* Chicago, Illinois, and

EDWARD A. GAENSLER, Boston, Mass.

Reports of surgery for emphysemagenerally have involved small numbers of patients, variable selection criteriaand short observation periods with improvement often pronounced on

subjectivegrounds alone. Therefore, 21 years ago, we began a prospective study usingclinical, radiologic and physiologic indices to classify bullae and to definethe natural history, results of surgery and features which might predict afavorable outcome.

Since 1952, 368 cases of airspacedisorders were referred. For this report we excluded bronchogenic cysts, lobaremphysema, unilateral hyperlucent lung and bullae secondary to fibrosis. Thisleft 211 patients with clearly demarcated bullae in otherwise healthy lungs orassociated with chronic bronchitis and/or emphysema. Of these, 85 had surgery,11 bilateral. Patients were followed for a mean of 7.3 years and up to 20years. Surgery was advised but not performed in others who were similarlyfollowed as controls. Indications for operation included dyspnea (57),pneumothorax (18), "prophylaxis" (12), infection (6), and miscellaneous (3).

Operative mortality was 2.1% reflecting perhapsconservative or judicious selection in a group where 42% were over age 50.Physiologic results initially were excellent in 63%, moderate in 16% andinsignificant in 21%. Striking improvement occurred most often in paraseptal(periacinar) emphysema and following multiple plications. Poorer results wereseen after segmental or lobar resections and inchronic bronchitis. Long term outcome will be compared to un-operated patients.Bullae rarely recurred on the operated side; occasionally, contralateralenlargement was noted.

Simpleoverall function tests were convenient and reliable in assessment. The extentof emphysema was best substantiated by angiography and diffusing capacitymeasurement. Comparison of plethysmographic and Helium FRC values was useful inestimating trapped gas. Regional function studies, including bronchospirometryand perfusion scans, as

well as elastic recoil measurements yielded usefulinformation but were associated with low patient acceptance or high cost.

WEDNESDAY MORNING, APRIL 24, 1974

Back to Annual Meeting Program

8:30 A.M. Scientific Session

Ballroom

29. Mediastinal Masses in Infants and Children

WILLIAM J. POKORNY,* and JOSEPH O. SHERMAN,*

Chicago, Illinois

Sponsored by F. S. Idriss, Chicago, Illinois

During the last 18 years, 111 infants and children under 16 years of age were admitted to the Children€™s Memorial Hospital with a mediastinal mass. There were 36 neurogenic tumors, 3 enteric duplications, 11 bronchogenic cysts, 9 primary mediastinal Hodgkin€™s Disease, 15 lymphosarcomas, 6 undifferentiated sarcomas, 7 lymphangiomatous malformations, 4 teratomas, 3 thymic tumors, 3 thymic cysts, 7 thymic hyperplasias, 4 inflammatory masses and 3 miscellaneous tumors. 54% were malignant.

This retrospective study reviews the presenting signs and symptoms as well as laboratory and radiographic findings in an effort to outline useful points in the differential diagnosis. Treatment and follow-up are presented with particular emphasis on the 27 malignant neurogenic tumors and the 34 sarcomas and lymphomas presenting primarily as mediastinal masses.

Fifty of the 51 children with benign tumors were alive and well at the last follow-up. Thirty of the 61 children with malignant tumors died, including the 15 children with lymphosarcomas and the 5 children over 2 ½ years of age with neuroblastoma. There was only one death in the group of 13 children under 13 months of age with neuroblastoma. All 9 children with ganglioneuroblastoma, regardless of age, were living and well at the last follow-up.

30. Surgical Treatment in Myasthenia Gravis: A 27 Year Experience

HERBERT E. COHN,* ROBERT W. SOLIT,* NATHAN

SCHLEZINGER,* and NORMAN J. SCHATZ,*

Philadelphia, Pa.

Sponsored by Charles Fineberg, Philadelphia, Pa.

Surgical removal of the thymus gland now assumes an important role in the treatment of myasthenia gravis at our institution. Although the disease is characterized by spontaneous remissions and exacerbations, and symptoms may be controlled with anticholinesterase drugs, medical therapy generally does not effect a cure. Thymectomy can result in complete and permanent remission in properly selected cases. Increasing experience has been gained in the surgical approach to this disease, results have become more predictable, and postoperative morbidity and mortality has been significantly reduced.

Since 1946, 56 patients have undergone thymectomy for myasthenia gravis at the Thomas Jefferson University Hospital. Sixteen patients had thymomas. The patients have ranged in age from three years to 70 years, with the average age in the thymoma group being 50 years, and that in the non-thymoma group being 28 years.

Prior to 1962, there were five postoperative deaths in 18 patients. All of these deaths were related to ventilatory complications. Since 1962 there have been two postoperative deaths in 37 patients, both in patients with malignant thymomas and unrelated to ventilatory complications. There have been no deaths in the non-thymoma group. Of the 49 patients surviving operation, 43 have shown definite improvement with 18 showing complete remission to this time, anywhere from two to 11 years.

Although the etiology of the disease remains obscure, refinements in case selection and interoperative and postoperative management has led to a satisfactory outcome in the greater majority of these patients. Our experience compares favorably with that of other institutions caring for patients with similar problems. Indications for operation and pre- and postoperative management are reviewed. Correlation of clinical results with pathologic findings is presented, and the pertinent literature is reviewed. Our experience suggests that thymectomy is the preferred method of treatment in those cases of myasthenia gravis that do not show a favorable response to medical therapy.

31. Cardiorrhaphy in the Emergency Center

KENNETH L. MATTOX,* ARTHUR C. BEALL, JR.,

GEORGE L. JORDAN, JR.,* and MICHAEL E. DeBAKEY, Houston, Texas

The acutely injured patient may require emergency thoracotomy as an integral part of his resuscitation. In critical circumstances thoracotomy in the emergency center for control of hemorrhage, cardiac massage, and direct repair of crucial injuries can be lifesaving. Such an approach may be required for urgent repair of cardiac injuries.

Between January of 1970 and December of 1972, over 5000 emergency operations were performed for blunt and penetrating trauma at Ben Taub General Hospital. Emergency thoracotomy was required in more than 300 cases. Of these, 106 patients required thoracotomy in the emergency center due to rapid deterioration in their clinical condition. Twenty-nine of these patients who required such a maneuver had injury to the heart.

This aggressive approach allowed salvage of 69 per cent of these critical patients with cardiac injuries. Autotransfusion, emergency cardiopulmonary bypass and fine screen filtration of transfused blood have been valuable adjuncts to this lifesaving measure. Thoracotomy in the emergency center should be considered as a primary modality in the management of moribund patients with penetrating wounds of the chest.

32. Effect of Neural and Humoral Factors on Pulmonary Hemodynamics and Microcirculation in Pulmonary Embolism

I. AYHAN OZDEMIR,* WATTS R. WEBB, and STENNIS D. WAX,*

Syracuse, N.Y.

Clotted blood releases humoral substances including serotonin which deleteriously alter cardiopulmonary hemodynamics much as occurs in pulmonary embolism. The etiology and role of the neural or humoral factors have not been established.

Thirty-one anesthetized dogs were divided into five groups. Effects of autologous clot 2 ml/kg, serotonin 75 micrograms/kg/min, heparin 10 mg/kg and reserpine 0.2 mg/kg x 3, on intact and denervated (reimplanted) left lungs were studied by measuring cardiac output (CO), right a trial (RA), pulmonary artery (PA), pulmonary artery wedge (PAW), pulmonary venous wedge (PVW), small pulmonary vein (SPV), left atrial (LA) and systemic pressures. Pulmonary and systemic vascular resistances were calculated. Pulmonary microcirculation was studied with cinemicroscopy up to 450 magnification.

In intact lung with serotonin infusion or autologous clot injection PA and PVW pressures increased 120% ($p < 0.02$). PAW and SPV pressures rose minimally as LA pressure fell. Thus pulmonary vascular resistance increased primarily in the arterioles. Cardiac output decreased 25-35%, systemic pressure fell and systemic vascular resistance decreased 26% ($P < 0.05$). Pulmonary microcirculation was severely decreased and showed extensive red cell aggregation.

Lung denervation did not prevent serotonin or autologous clot induced pulmonary vascular hypertension and microcirculatory changes. Heparinized dogs tolerated 150% more clot than controls, pulmonary vascular hypertension was significantly less and cell

aggregation did not occur in the microcirculation. In dogs pretreated with reserpine, autologous clot or serotonin induced pulmonary vascular changes were prevented and capillary microcirculation remained essentially normal.

These studies suggest that serotonin from autologous clot causes further cell aggregation and microemboli in the pulmonary bed which can be protected by heparin and by reserpine which depletes the blood serotonin level. Humoral factors play a more significant role than neural factors in the progressive patho-physiology of pulmonary embolism (increased pulmonary vascular resistance, interstitial and intra-alveolar edema, atelectasis). Motion pictures of the micro-circulation will be shown.

33. Prognostic Factors in the Treatment of Acute Respiratory Insufficiency with Long-Term Extracorporeal Circulation

J. DONALD HILL,* JACK RATLIFF,* ROBERT FALLAT,*

HARVEY TUCKER,* MAURICE LAMY,* HARM DIETRICH,*

and FRANK GERBODE, San Francisco, Calif.

The lungs, inflicted with acute pathological changes producing severe hypoxemia, can recover if given time. Based on this premise, 21 patients were treated with prolonged extracorporeal oxygenation to provide the lungs time to heal. Eleven of the 21 patients were successfully taken off perfusion. Four were ultimate survivors. All pathological forms of acute respiratory insufficiency therefore are not reversible. The identification of various prognostic factors are important if this new therapy is going to be properly applied. To expand this identification process we performed open lung biopsies for pathological classification and graphed daily measurements of Pa02, compliance, PVR, cardiac output, Qs/Qt and VD/VT at variable FI02 and PEEP enabling us to develop pulmonary function profiles.

The following factors seem to be important in determining the reversibility of the pulmonary lesion:

1. The shorter the time lapse from onset of disease to initiation of perfusion, the more likely the lungs will improve during perfusion.

2. The presence of exudate and inflammatory cells in the pre-perfusion lung biopsy are more favorable for reversibility than fibroblastic infiltration.

3. Pulmonary insufficiency resulting from trauma is a favorable etiology.

4. Hypoxia related to severe ventilation-perfusion inequality (V/Q) is a favorable form of reversible pulmonary pathology.

5. Hypoxemia related to Qs/Qt (fixed shunt or severe diffusion abnormality) is an unfavorable form of pulmonary damage.

6. Maintaining high pulmonary artery blood saturation and adequate flow was associated with unusual improvements in pulmonary recovery.

34. Prolonged Extracorporeal Cardiopulmonary Support in Man

ROBERT H. BARTLETT,* ALAN B. GAZZANIGA,* SUSIE W. FONG,*

NORA E. BURNS,* TAMAR GERAGHTY,* NANCY WETMORE,*

DOUG WILL,* GILLIAN WILLIAMS,* and

CHRISTINE WOLDANSKY,* Irvine, Calif.

Sponsored by John E. Connolly, Irvine, Calif.

Techniques for management of prolonged extracorporeal circulation (ECC), and characterization of the normal response to that procedure, have been studied in sheep in our laboratory for 4 years. Based on this experience, prolonged ECC (>24 hours) has been carried out in 4 patients for periods of 2, 3, 3, and 16 days. Venoarterial bypass (60-90% of cardiac output) was used with: a membrane oxygenator circuit with no reservoirs, low dose heparin continuously titrated against clotting time, and servo-regulated bypass flow based on arterial and pulmonary arterial pulse contour. Hemodynamics, oxygen delivery and consumption, blood damage, organ function and damage, oxygenator function, and detailed studies of coagulation and platelet function were measured at regular intervals. One 2 year old boy was supported for 2 days for cardiac insufficiency; he survived without difficulty. Three young adults were supported for severe pulmonary insufficiency; all died with irreversible lung damage. ECC proceeded without incident in all patients. Coagulation factors remained normal while platelet function and concentration decreased slowly during bypass. Kidney, brain, liver and heart function remained normal up to 16 days. Mean pulmonary artery pressure could be maintained below 10mm Hg resulting in the resolution of interstitial infiltrates of adult respiratory insufficiency. Irreversible lung damage was manifested by very high pulmonary vascular resistance and very little gas exchange. Prolonged ECC can be carried out without complications for more than 2 weeks. Further clinical experience is needed to improve criteria for patient selection and timing of this procedure.

35. Impaired Oxygenation at Clinical Levels of Humidity: A Laboratory Study

NATHANIEL P. H. CHING,* JOSEPH M. KAZIGO,*

HAROLD Z. SCHEINMAN,* ROBERT G. HICKS,* and

THOMAS F. NEALON, JR., New York, N.Y.

In a laboratory study of oxygen toxicity, humidity levels used in current clinical practice proved undesirable based on lower blood oxygen determinations. The effect of different levels of oxygen on individual lungs as measured by blood PO_2 levels was studied in dogs ventilated with a trachea! divider. One lung was ventilated with room air while the other was ventilated with 100% oxygen. Humidity of the gases ranged from dry to 50 mg/L of water. Humidity was supplied by an Engstrom ultrasonic nebulizer (17-50 mg/L) or by heating Bennet humidifiers to 24°C (11-15 mg/L) or 40°C (20-41 mg/L). Blood was sampled from the pulmonary veins after 30 minutes, 5 and 7 hours and hourly from the femoral artery for analysis of pH, PCO_2 and PO_2. After 7 hours the ventilating mixtures were reversed and pulmonary vein blood was again sampled for analysis of pH, PCO_2andPO_2.

After prolonged ventilation the lungs ventilated by the high oxygen mixtures produced gradually decreasing PO_2€™s. When the mixtures between the two lungs were reversed the high oxygen mixture again produced high PO_2€™s when introduced into the contralateral lung for the first time. The diminution in oxygenation which was measured after prolonged ventilation with high concentrations of oxygen was most severe for water contents of 28-50 mg/L. This water content is the same as that produced by the most commonly used clinical apparatus. Additional studies aimed at delineating this mechanism will be presented.

36. Positive-Pressure Breathing Treatments in Postoperative Respiratory Therapy: Myth vs. Fact

DOUGLAS H. McCONNELL,* GERALD D. BUCKBERG,*

and JAMES V. MALONEY, JR., Los Angeles, Calif.

Intermittent positive pressure breathing treatments (IPPB) are an accepted adjunct for pulmonary toilet in the postoperative thoracic surgical patient. The rationale for IPPB is that it (1) expands unventilated alveoli, (2) dilates collapsed bronchi, (3) increases tidal volume, and (4) aids the elimination of secretions. It is fundamental to this rationale that pulmonary expansion by positive pressure applied to the upper airway is different and superior in physiologic effect to pulmonary expansion created by the negative pleural pressure of normal inspiratory effort. It is the purpose of this study to present data which proves false this widely accepted premise. Objective evidence demonstrates: 1) the physical force expanding the lung in normal respiration is atmospheric pressure (not negative pleural pressure) and is identical to the physical effects of IPPB, 2) bronchial dilation achieved with IPPB is the same as with normal inspiration (Otis-Proctor method),

3) significantly increased alveolar expansion can be achieved with continuous positive pressure breathing (CPPB or PEEP), by voluntary effort, or by breathing through a restricted orifice without positive pressure, but is not achieved by conventional IPPB treatments, 4) the direct pulmonary effects of a normal inspiration and positive pressure inspiration of the same depth and at the same thoracic volume are identical, 5) that the only physiologic difference between a normal and positive pressure inspiration of the same depth and at the same thoracic volume is related to the circulation. An appropriate understanding of the physiology of respiratory mechanics enables one to achieve the benefits that are erroneously attributed to IPPB without the cost and inconvenience associated with it.

* By Invitation

WEDNESDAY AFTERNOON, APRIL 24, 1974

Back to Annual Meeting Program

2:00 P.M ScientificSession
Ballroom

37. Four hundred Consecutive Patients withPermanent Transvenous Pacemakers

EDWARD F. CONKLIN,* STANLEY GIANNELLI,JR., and THOMAS F. NEALON, JR., New York, N.Y.

400consecutive patients were treated with permanent transvenous pacemakers betweenApril 1, 1965 and May 1, 1973 at the St. Vincent's Hospital and Medical Center,New York, N.Y. The average age of the patients was 75 years. All procedureswere performed in the cardiac catheterization laboratory under localanesthesia. Ventricular triggered demand pacemakers were used in 331 patients.There was one operative death. One primary implantation became infected. Threepatients were converted to epicardial pacing following failure of transvenouspacing. This has not been necessary in any of the 350 patients treated sinceOctober, 1967. 156 patients have had a total of 235 pulse generatorreplacements without morbidity. Electrode fracture (10 patients), shift incatheter position (18 patients) and exit block (22 patients) have been easilycorrected without morbidity under local anesthesia. 104 patients died within 22months of implantation. 86 patients have been followed for 40 months or longer,and 10 patients for 80 or more months. Stable catheter position once achievedappears permanent. In the absence of exit block pacing thresholds have shown notendency to rise. No recurrence of Adams-Stokes attacks have been noted in anypaced patient.

The transvenous technique of permanentpacing remains the method of choice because it iseasily tolerated bythese aged patients, the pacing thus achieved is stable and effective, and thefew complications are easily corrected.

38. The Advantages of Transthoracic (TT) ElectrodeImplantation For Permanent Cardiac Pacing

GEDDES (FRANK) O. TYERS,* H. C. HUGHES,JR.,* H. A. TORMAN,* and J. A. WALDHAUSEN,Hershey, Pa.

It isgenerally accepted that transvenous (TV) electrodes have a lower stimulationthreshold and risk than TT electrodes. The recent literature and our experiencewith >100 pacer insertions indicate a mortality rate of <2% with eithertechnique. As complication rate (2-3x) and the late mortality rate are higherwith TV pacing, and new techniques allow TT electrode insertion under local anesthesia,reinvestigation of pacing thresholds was indicated.

Identical high current density, ball-tipleads (Cordis) were placed intramyocardially on the left (LVA) and right (RVA)ventricular apices and TV in 20 dogs with complete heart block. At 7 stimulusdurations 0.05-5 msec, threshold voltage and current were measured directlyusing an oscilloscope and current probe.

At allstimulus durations in the clinical range, LVA stimulation required less current(all p <0.05), voltage (all p <0.025) and energy (all p < 0.01) thaneither RV site. Threshold energy needs with a 1 msec pulse were: LVA 0.07 ï¿½0.01ï¿½ joules vs RVA 0.18 ï¿½ 0.05ï¿½ Joules vs TV 0.15 ï¿½ 0.02ï¿½ joules.

There is a 50% reduction in energy needsand battery drain with TT LVA pacing. Previous studies showing TV thresholdslower than TT thresholds used electrodes of differing configuration, surfacearea, and materials which biased results in favor of the endocardial site. Whenall clinical and electrophysiological factors are considered, TT pacing electrodesdeserve much wider clinical application.

39. Surgical Aspects of Regional Myocardial BloodFlow and Myocardial Pressure

RONALD J. BA1RD, MASAO OKUMORI,*FRIEDRICH DUTKA,*
ALBERTO de la ROCHA,* and MARTINGOLDBACH,*
Toronto, Ontario, Canada

Thesurgical manipulations of partial bypass, complete bypass, and ventricularfibrillation have profound effects on regional myocardial pressure and coronaryflow distribution. In 80 experiments on mongrel dogs, regional myocardialpressure was monitored by both the "flow cessation" technique and by"micro-tip" pressure transducers. Regional flow distribution was mapped byradioactive micro-spheres of 15 micron size labelled with three differentisotopes.

The gradient in systolic pressure, from alow subepicardial to a high subendocardial value, persists as the leftventricular volume decreases from normal to partial to complete bypass. Thispressure gradient also persists in the fibrillating ventricle. Neither theregional myocardial pressure nor the regional myocardial flow are affected bythe technique of inducing or maintaining fibrillation (spontaneous, alternatingcurrent, direct current).

If mean coronary perfusion pressure isheld constant, there is an increase in total coronary flow with thechange from normal (82 ï¿½ 13 S.D. ml./100 Gm of left ventricle/min), to completebypass with the heart beating (117 ï¿½ 36 S.D.), and a further increase withfibrillation (171 ï¿½ 34 S.D.). P <.005. Flow to the inner half of theventricle is not a hazard as long as perfusion pressure is adequate.

If perfusion pressure is allowed to fallbelow a critical level (55 - 60 mm.Hg) there is a marked decrease in the innerwall - outer wall flow ratio in the fibrillating heart, suggestinginadequate subendocardial perfusion. This level of critical perfusion pressureis elevated by coronary artery narrowing or ventricular hypertrophy.

40. A Clinical Methodfor Detecting Subendocardial Ischemia Following Cardiopulmonary Bypass

PETER A. PHILIPS,* ALAN T. MARTY,* and
ALFONSO M. MIYAMOTO,* Duarte, Calif.
Sponsored by Lyman A. Brewer, HI, LosAngeles, Calif.

Unrecognized subendocardial ischemia, afrequent cause of death following cardiac surgery, may be present despitesatisfactory systemic and central venous pressures. A more accurate earlyindicator of subendocardial ischemia has been studied experimentally using themyocardial supply/demand ratio (MSDR), defined as the ratio of aortic diastolicpressure time index divided by aortic tension index. To make monitoring of MSDRclinically applicable, an inexpensive electronic circuit was designed utilizingmean left atrial (LA) and radial pressures to determine MSDR. Radial and aorticpressure calculations give similar MSDR values. The figure obtained is termedthe endocardia! viability ratio (EVR).

In 50consecutive open cardiac procedures, EVR, LA, right atrial (RA), and radialartery pressures were recorded intra-operatively and for three dayspost-operatively. Results confirmed the applicability and reliability of EVR asan indicator of myocardial ischemia and patient survival. Forty patients withpost-perfusion EVR's of .9 or greater had uneventful postoperative recoveries.Six patients with acceptable systemic pressures averaging 90/65 mm Hg, hadaverage EVR's of .736 with average LA pressures of 30.3 mm Hg. Immediateapplication of intra-aortic balloon counterpulsation (IABC) resulted in a riseof EVR to 1.26 (p <.01), a fall in LA pressures to 17.9 mm Hg (p <.05),and improvement in electrical and cardiac activity. All six survived. In fourothers, despite IABC, MVR's remained below .6 and all died (two from extensivemyocardial necrosis, two from predominant right heart failure).

Inconclusion, monitoring EVR is clinically useful in detecting early evidence ofsubendocardial ischemia. EVR may fall before systemic or central venouspressure deteriorates, indicating the need for early myocardial support,undetect-able by conventional methods. Furthermore, EVR can easily be adaptedto monitoring equipment currently used in coronary and postsurgical intensivecare units.

41. Selection of the Candidate for MyocardialRevascularization: A Profile of High Risk Based on Multivariate Analysis

FLOYD D. LOOP,* JULIO N. BERRETTONl,*AUGUSTO D. PICHARD,* WAYNE SIEGEL,* MEHDI RAZAVI,*and DONALD B. EFFLER, Cleveland, Ohio

Asurvey of 50 patients who died from cardiac related causes after directcoronary artery surgery (1967-1973) was made with respect to 29 clinical,angiographic, and operative variables. These factors were compared withidentical characteristics of 1,283 survivors operated on in 1972. Throughdiscriminant analysis, the various characteristics, isolated or multiple in anycombination, have been converted to risk related to operative death.

The distinctive features of the mortalitygroup were vastly different from those in the surviving group. For example, 24%of the mortality group had probability (risk) indexes of 0.90 or higher,whereas these factors or variables of similar weight produced an equivalentrisk in only 0.8% of the survivors; thus, operative death, under these specificcircumstances, could be predicted with an estimated 96.7% assurance. Each ofsix patients with mortality risks in the 99th percentile had (1) cardiomegaly,(2) ECG evidence of previous infarction, (3) documented congestive heartfailure (CHF), (4) triple vessel coronary artery disease, and (5) elevated leftventricular end diastolic pressure. Other prominent findings in high risksituations included left main or high anterior descending coronary artery obstructionassociated with preoperative signs of cardiac decompensation. As a singlefactor, CHF exerted the most influence on the probability of dying.

A newand more descriptive statistical interpretation of the factors presumed toaffect risk is presented. A numerical index indicates the relative importanceof each variable and yields a coefficient used to predict high and low risksituations from given clinical and arteriographic combinations.

42. Myocardial Revascularization with PoorVentricular Function

BEN F. MITCHEL, JR., Dallas, Texas, PETERALIVIZATOS,* Athens, Greece, MAURICE ADAM, GARY J.LAMBERT, and GERALD F. GEISLER,* Dallas, Texas

In order to evaluate current opinionconcerning the inadvisability of bypass surgery for angina patients with poorventricular function and/or congestive heart failure, we have reviewed ourfirst 1000 patients undergoing revascularization. Eighty patients with poorventricular function, as judged by ventriculography and ejection fractiondeterminations, were available for review.

Nine patients were categorized as having"very poor ventricular function" (poor contractility with ejection fraction ofless than 0.2). All nine patients had three vessel disease and all threevessels were bypassed in each instance. Eight patients are alive and well.There were no early deaths and only one late death is noted. (Total mortality:11.1%).

Thirty-one patients were categorized ashaving "poor ventricular function" (poor contractility with an ejection of 0.2to 0.4). Twenty-five patients had three vessel disease but in only 14 patientswere three vessels grafted. There were eight early deaths (25.8%) and five latedeaths (16.1%). (Total mortality: 42%):

Fortypatients were categorized as having "fair ventricular function" (poor contractilitywith an ejection fraction of 0.4 to 0.6). Thirty-six patients had three vesseldisease but in only of 23 patients were all three vessels bypassed. There werefour early deaths (10%) and four late deaths (10%). (Total: 20%).

Mortality, in patients undergoing directmyocardial revascularization with poor ventricular function, therefore appearsto be directly related to the severity of the disease and to whether or notdiseased vessels can be bypassed. Until we can better distinguish the poorly functioningischemic ventricle from the poorly functioning scarred ventricle, we feel thatpatients in this category should continue to be individually evaluated and notcategorically denied surgery.

43. Direct Selective Myocardial Revascularizationby Internal Mammary Artery to Coronary Vein Anastomosis

SANG B. PARK,* GEORGE J. MAGOVERN, GEORGEA. LIEBLER,*

CHARLES M. DIXON,* FRANK R. BEGG,* and
DON L. FISHER,* Pittsburgh, Pa.

In the past year, we have studiedselective retrograde coronary perfusion in mongrel dogs by anastomosing thedistal internal mammary artery to the anterior descending vein, ligating thevein proximally and simultaneously placing an ameroid constrictor on theanterior descending coronary artery. Out of a group of ten dogs, there were twolong-term survivors with a patent graft and a constricted anterior descendingcoronary artery in whom studies indicated retrograde myocardial perfusion. Wehave subsequently performed three clinical cases associated with right andcircumflex artery bypass grafts. These three patients were studied beforeleaving the hospital and showed patent grafts and coronary sinus oxygensaturations and angiographic data which indicated retrograde myocardialperfusion. Subsequent studies at four months on two of the patients studied todate indicated one graft to be open and one to be closed. This paper willpresent the pre- and the post-operative angiograms and follow-up angiograms aswell as the post-operative isotope myocardial scanning and coronary sinussaturation studies. The early clinical data would indicate that the proceduremay have merit when diffuse disease or total obstruction of the anteriordescending coronary artery precludes direct anastomosis. Experimental resultssuggest that the procedure does not prevent an infarction with acute ligationof the concomitant coronary artery as suggested by Kolff in his work in thecalf.

44. The Rationale for Surgery in PreinfarctionAngina

JACK M. MATLOFF, HECTOR SUSTAITA,* KANUCHATTERJEE,*
H. J. C. SWAN,* Los Angeles, Calif.

Of 100patients with identical criteria for preinfarction angina, 33 have been treatedmedically and 67 surgically. Generally, these two patient populations werequite similar in regard to age, sex, number of prior infarctions and duration ofacute and chronic anginal symptoms. With medical therapy, 13 patients died and20 experienced non-fatal infarctions within two weeks. The surgical patientswere studied and underwent saphenous vein bypasses on an emergent basis.Twenty-three of these patients, classified as complicated, experiencedrepetitive ventricular arrhythmias, congestive heart failure, myocardialinfarction and/or shock prior to their referral for surgery. Two of thesepatients experienced post-operative infarction and died. The remaining 44patients underwent surgery with a single mortality. Two to 37 months aftersurgery, 49 of the operated patients are asymptomatic and 3 who infarcted priorto surgery have mild congestive failure. Six patients have residual angina.This experience supports the concept that preinfarction angina is a malignantsyndrome in which the course can be significantly altered by appropriatesaphenous vein bypass.

THEAMERICAN ASSOCIATION FOR THORACICSURGERY FUTUREMEETINGS

1975 April 14-16 Americana Hotel NewYork, New York

1976 April 23-25 Century Plaza LosAngeles, California

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Back to Annual Meeting Program

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- Kirklin, John W.

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Anchorage
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  - Mannix, Edgar P., Jr.
- Fresno
  - Evans, Byron H.
- Inglewood
  - Baisch, Bruce F.

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Harter, John S.
Mahaffey, Daniel E.
Ransdell, Herbert T., Jr.
Wheat, Myron W., Jr.

LOUISIANA

Alexandria
Knoepp, Louis F.
Baton Rouge
Beskin, Charles A.
Metairie
Ochsner, Alton, Jr
New Orleans
Blalock, John B.
DeCamp, Paul T.
Drapanas, Theodore
Glass, Bertram A.
Hewitt, Robert Lee
Lindsey, Edward S.
Ochsner, Alton
Ochsner John, L
Rosenberg, Dennis M.
Schramel, Robert J.
Strug, Lawrence H.

MAINE

Liberty
Hurwitz, Alfred

Watkins, David H.
Iowa City
Ehrenhaft, Johann L.
Rossi, Nicholas P.

KANSAS

Cunningham
Allbritten, Frank F.
Kansas City
Friesen, Stanley R.
Miller Don R
Reis, Robert L.
Shawnee Mission
Reed, William A.
Wichita
Tocker, Alfred W.
Winfield
Snyder, Howard E.

KENTUCKY

Lexington
Bryant, Lester R.
Crutcher, Richard R.
Dillon, Marcus L.

MASSACHUSETTS

Boston
Adams, Herbert D.
Austen, W. Gerald
Badger, Theodore L.
Barsamian, Ernest M.
Beecher, Henry K.
Berger, Robert L.
Bernhard, William F.
Black, Harrison
Bougas, James A.
Boyd, David P.
Braunwald, Nina S.
Buckley, Mortimer J.
Burke, John F.
Castaneda, Aldo R.
Cleveland, Richard Joseph
Clowes, George H. A., Jr.
Collins, John J., Jr.
Daggett, Willard Manning
Deterling, Ralph A., Jr.
Ellis, F. Henry, Jr.
Frank, Howard A.
Grillo, Hermes C.
Gross, Robert E.
Harken, Dwight E.
Mundth, Eldred D.
Nardi, George L.
Neptune, Wilford B.
Overholt, Richard H.
Rheinlander, Harold F.
Russell, Paul S.
Scannell, J. Gordon
Schuster, Samuel R.
Starkey, George W. B.
Watkins, Elton, Jr.
Portland
Drake, Emerson H.
Hiebert, Clement A.

MARYLAND

Baltimore
Attar, Safuh M.A.
Brantigan, Otto C.
Cowley, R Adams
Gott, Vincent L.
Haller, J Alex, Jr.
Mason, G. Robert
McLaughlin, Joseph S.
Michelson, Elliott
Reinhoff, William F., Jr.
Wilder, Robert J.
Bethesda
Dennis, Clarence
Mills, Mitchell
Morrow, Andrew G.
Worton
Walkup, Harry E.

Swampscott
Miller, Carroll C.
Wayland
Lefemine, Armand A.

MICHIGAN

Ann Arbor
Gago, Otto
Kirsh, Marvin M.
Morris, Joe D.
Sloan, Herbert
Benton Harbor
Lui, Alfred H. F.
Detroit
Arbulu, Agustin
Benson, Clifford D.
Day, J. Claude
Davila, Julio C.
Dodrill, Forest Dewey
Lam, Conrad R.
McDonald, John R.
Wilson, Robert F.
Grand Rapids
Harrison, Robert W.
Meade, Richard H.
Rasmussen, Richard A.
Grosse Pointe
Gerbasi, Francis S.
Grosse Pointe Woods
Taber, R. E.
Kalamazoo
Neerken, Adrian J.
Southfield
Barrett, Raymond J.
Royal Oak
Timmis, Hilary H

Wilkins, Earle W., Jr.
Woods, Francis M.
Brookline
Madoff, Irving M.
Chestnut Hill
Benedict, Edward B.
Dedham
Soutter, Lamar
Maiden
Boyd, Thomas F,
Desforges, Gerard
Taylor, Warren J.
Newton Center
Gaensler, Edward A.
Newton Lower Falls
Laforet, Eugene G.
Lynch, Joseph P.
Strieder, John W.
Quincy
Thrower, Wendell B.

St. Paul
Leven, N. Logan
Perry, John F., Jr.

MISSISSIPPI

Jackson
Hardy, James D.
Johnston, J. Harvey, Jr.
Neely, William A.
Netterville, Rush E.

MISSOURI

Columbia
Almond, Carl H.
Kansas City
Adelman, Arthur
Benoit, Hector W.
Buckingham, William W.
Holder, Thomas M.
Killen, Duncan A.
Mayer, John H., Jr.
St. Louis
Earner, Hendrick Boyer
Baue, Arthur E.
Bergmann, Martin
Burford, Thomas H.
Clark, Richard E.
Ferguson, Thomas B.
Geha, Alexander S.
Kaiser, George C.
Lewis, J. Eugene, Jr.
Lucido, Joseph L.
Roper, Charles L.
Weldon, Clarence S.
Willman, V. L.

NEBRASKA

Omaha
Bisgard, J. Dewey
Miller, Fletcher A.

MINNESOTA

Duluth
Fuller, Josiah
Minneapolis
Garamella, Joseph J.
Humphrey, Edward W.
Jensen, Nathan K.
Johnson, Frank E.
Lillehei, Richard C.
Myers, J. Arthur
Varco, Richard L.
Wangensteen, Owen H.
Rochester
Bernatz, Philip E.
Clagett, O. Theron
Danielson, Gordon K., Jr.
McGoon, Dwight C.
Olsen, Arthur M.
Payne, W. Spencer
Wallace, Robert B.

New Brunswick
Kunderman, Philip J.
Mackenzie, James W.
Pennsauken
Camishion, Rudolph C.
Pierucci, Louis, Jr.
Short Hills
Demos, Nicholas J.
Trenton
Sommer, George N., Jr.

NEW MEXICO

Albuquerque
Edwards, W. Sterling
Las Vegas
Thai, Alan P.
Santa Fe
Wilson, Julius L.

NEW YORK

Albany
Alley, Ralph D.
Kausel, Harvey W.
Stranahan, Allan
Bay Shore
Ryan, Bernard J.
Binghamton
Williams, Mark H.
Bronx
Bloomberg, Allan E.
Friedlander, Ralph
Hirose, Teruo
Robinson, George
Veith, Frank J.
Bronxville
Frater, Robert W. M.
Brooklyn
Burbank, Benjamin
Garzon, Antonio A.
Klopstock, Robert

NEW HAMPSHIRE

Hanover
- Tyson, M. Dawson

NEW JERSEY

East Orange
- Auerbach, Oscar
- Gerard, Franklyn P.

Hillsdale
- Amberson, J. B.

Jersey City
- Timmes, Joseph J.

Moorestown
- Morse, Dryden P.

Newark
- Neville, William E.

Mineola
- Mangiardi, Joseph L.

NewYork
- Aufses, Arthur H.
- Bailey, Charles P.
- Beattie, Edward J., Jr.
- Berry, Frank B
- Bloch, Robert G.
- Bowman, Frederick O., Jr.
- Boyd, Arthur D.
- Cahan, William G.
- Clauss, Roy H.
- Cook, William A.
- Cournand, Andre
- Cracovaner, Arthur J.
- Davidson, Louis R.
- Ebert, Paul A.
- Findlay, Charles W., Jr.
- Fischer, Walter W.
- Fitzpatrick, Hugh F.
- Ford, Joseph M.
- Gerst, Paul H.
- Gianelli, Stanley, Jr.
- Glenn, Frank
- Green, George E.
- Holman, Cranston W.
- Holswade, George R.
- Humphreys, George H., II
- Jaretzki, Alfred III
- Kirschner, Paul A.
- Lambert, Adrian
- Lillehei, C. Walton
- Litwak, Robert S.
- Maier, Herbert C.
- Malm, James R.
- McCord, Colin W.
- Miscall, Laurence
- Nealon, Thomas F., Jr.
- Okinaka, Arthur J.
- Pickhardt, Otto C.
- Redo, S. Frank
- Reed, George E.
- Reemtsma, Keith
- Levowitz, Bernard S.
- Potter, Robert T.
- Sayer, Philip N.

Buffalo
- Adler, Richard H.
- Andersen, Murray N.
- Leahy, Leon J.
- MacManus, Joseph E.

Cooperstown
- Blumenstock, David A.

Elmira
- Tillou, Donald J.

Great Neck, L.I.
- Crastnopol, Philip
- Ripstein, Charles B.

Huntington
- Heroy, William W.

Patchogue
- Finnerty, James

Port Washington
- Johnson, Elgie K.

Poughkeepsie
- Douglass, Richmond

Rego Park
- Davis, Lowell L.

Rochester
- DeWeese, James A.
- Mahoney, Earle B.
- Schwartz, Seymour I
- Zaroff, Lawrence I.

Rockville Centre
- Wesolowski, Sigmund A.

Roslyn
- Thomson, Norman B., Jr.

Saranac Lake
- Decker, Alfred M.
- Merkel, Carl G.

Scottsville
- Emerson, George L.

Snyder
- Lajos, Thomas Z.

Syracuse
- Bugden, Walter F.
- Webb, Watts R.

Tonawanda
- Kaunitz, Victor H.

NORTH CAROLINA

Asheville
- Scott, Stewart M.

Chapel Hill
- Wilcox, Benson R.

Charlotte
- Robicsek, Francis
- Taylor, Frederick H.

Durham
- Hart, Deryl
- Sabiston, David C.
- Sealy, Will C.
- Silver, Donald

Riggins, H. McLeod
Rubin, Morris
Sarot, Irving A.
Seley, Gabriel P.
Spencer, Frank C.
Thompson, Samuel A.
Tice, David A.
Touroff, Arthur S. W.
Watson, William L.
Wichern Walter A., Jr.
Wolff, William I.
Wylie, Robert H.

Northport
Soroff, Harry S.

Smith, David T.
Young, W. Glenn

Greensboro
Deaton, W. Ralph, Jr.

Oteen
Betts, Reeve H.
Takaro, Timothy

Winston-Salem
Cordell, A. Robert
Hudspeth, Allen S.
Johnston, Frank R.
Meredith, James H.

OHIO

Akron
Falor, William H.

Chardon
Mautz, F. R.

Cincinnati
Carter, B. Noland
Gonzalez, Luis L.
Helmsworth, James A.
Maurer, Elmer P. R.

Cleveland
Ankeney, Jay L.
Cross, Frederick S.
Effler, Donald B.
Groves, Laurence K.
Kay, Earle B.
Mendelsohn, Harvey J.
Wright, George W.

Columbus
Clatworthy, H. William
Kilman, James William
Klassen, Karl P.
Meckstroth, Charles V.
Sirak, Howard D.
Vasko, John Stephen

Dayton
DeWall, Richard A.

Toledo
Blakemore, William S.
Selman, Morris W.

Lancaster
Witmer, Robert H.

Harberth
Burnett, W. Emory

Havertown
Chodoff, Richard J.

Philadelphia
Aberdeen, Eoin
Edmunds, L. Henry, Jr.
Fineberg, Charles
Haupt, George J.
Lemmon, William M.
MacVaugh, Horace L. S.
Mendelssohn, Edwin
Nemir, Paul, Jr.
O'Neill, Thomas J. E.
Rosemond, George P.
Stayman, Joseph W.
Templeton, John W.
Thomas, Paul A.
Wallace, Herbert W.
Willauer, George

Pittsburgh
Bahnson, Henry T.
Ford, William B.
Magovern George J.
Pontius Robert C.
Rams, James J.
Ravitch, Mark M.
Sanes, Gilmore M.
Steichen, Felicien M.

Rydal
Frobese, Alfred S.
O'Neill, James F.

Sayre
Sewell, William H.

Wynnewood
McKeown, John J.

OKLAHOMA

Oklahoma City
Felton, Warren L. II
Greenfield, Lazar J.
Greer, Allen E.
Munnell, Edward R.
Williams, G. Rainey
Zuhdi, M. Nazih

Tulsa
Leibovitz, Martin

OREGON

Portland
Conklin, William S.
Poppe, J. Karl
Stari, Albert

Roseburg

RHODE ISLAND

Providence
Karlson, Karl E
Simeone, Fiormdo A.

SOUTH CAROLINA

Miller, Arthur C.

PENNSYLVANIA

Bethlehem
Snyder, John M.
Gladwyne
Flick, John B.
Johnson, Julian
Judd, Archibald R.
Hershey
DeMuth, William E., Jr.
Waldhausen, John A.

Jackson
Chandler, John H.
Knoxville
Blake, Hu Al
Domm, Sheldon E.
Newman, Robert W.
Waterman, David H.
Memphis
Carr, Duane
Cole, Francis H.
Eastridge, Charles E.
Garrett, H. Edward
Howard, Hector S., Jr.
Hughes, Felix A.
McBurney, Robert P.
Pate, James W.
Robbing, S. Gwin
Skinner, Edward F.
Nashville
Bender, Harvey W., Jr.
Dale, W. Andrew
Daniel, Rollin A.
Diveley, Walter L.
Foster, John H.
Gobbell, Walter G., Jr.
Johnson, Hollis E.
Sawyers, John L.
Scott, Henry W., Jr.

TEXAS

Austin
Hood, R. Maurice
Ross, Raleigh R.
Beaumont
Harrison, Albert W.
Cotulla
Hood, Richard E.
Dallas
Adam, Maurice
Davis, Milton V.
Holland, Robert H.
Kee, John L., Jr.
Lambert, Cary J.
Mitchel, Ben F., Jr.
Paulson, Donald L.
Razzuk, Maruf A.
Shaw, Robert R.
Sugg, Winfred L.
Urschel, Harold C., Jr.

Charleston
Bradham, R. Randolph
Hairston, Peter
Lee, William H., Jr.
Parker, Edward F.
Columbia
Ryan, Thomas C.

TENNESSEE

Chattanooga
Adams, Jesse E., Jr.
Hall, David P.

Houston
Beall, Arthur C., Jr.
Burdette, Walter J.
Cooley, Denton A.
Crawford, E. Stanley
De Bakey, Michael E.
Hallman, Grady L., Jr.
Henly, Walter S.
Kennedy, John Mines
Morris, George C., Jr.
Norman, John C.
Overstreet, John Wm.
Seybold, William D.
La Porte
Barkley, Howard T.
Lubbock
Dalton, Martin L., Jr.
San Antonio
Dooley, Byron M.
Heaney, John P.
Nixon, James W.
Proctor, Oscar S.
Stanford, William
Trinkle, J. Kent
Temple
Brindley, G. Walter
Weslaco
Dailey, James E.

UTAH

Salt Lake City
Cutler, Preston R.
Hughes, Richard K.
Liddle, Harold Venable
Mortensen, J. D.
Nelson, Russell M.
Rumel, William R.
Wolcott, Mark W.

VERMONT

Burlington
Miller, Donald B.
White River Junction
Crandell, Walter B.

VIRGINIA

Charlottesville
Damann, John F.
Drash, Everett C.

Wilson; Hugh E., III
Fort Worth
Johnson, Clive R.
Galveston
Derrick, John R.
Padula, Richard T.
Tyson, Kenneth R. T.

Richmond
Bosher, Lewis H.
Brooks, James W.
Cole, Dean B.
Gwachney, Owen
Johns, Thomas N. P.
Lower, Richard R.

WASHINGTON

Seattle
Bell, John W.
Cantrell, James R.
Dillard, David H.
Hill, Lucius D.
Jarvis, Fred J.
Jones, Thomas W.
Lawrence, G. Hugh
Merendino, K. Alvin
Mills, Waldo O.
Pinkham, Roland D.
Sauvage, Lester R.
Thomas, George I.
Spokane
Berg, Ralph, Jr.

CANADA

ALBERTA

Calgary
Miller, George E.
Edmonton
Callaghan, John C.
Couves, Cecil Melville
Meltzer, Herbert
Sterns, Laurence P.

BRITISH COLUMBIA

Vancouver
Allen, Peter
Ashmore, Phillip G.
Harrison, Elliott
West Vancouver
Robertson, Ross
Victoria
Stenstrom, John D.

MANITOBA

Winnipeg
Barwinsky, Jaroslaw
Cohen, Morely

NEW BRUNSWICK

St. John
Muller, William H., Jr.
Nolan, Stanton Peele
Falls Church
Conrad, Peter W.
Lynchburg
DeNiord, Richard N.
Moore, Richmond L.

WEST VIRGINIA

Charleston
Walker, James H.
Morgantown
Tarnay, Thomas J.
Warden, Herbert E.

WISCONSIN

Green Bay
Vorwald, Arthur J.
La Crosse
Gunderson, Alf E.
Madison
Curreri, Anthony R.
Kahn, Donald R.
Young, William P.
Marshfield
Sautter, Richard D.
Milwaukee
Flemma, Robert J.
Hausmann, Paul F.
Johnson, W. Dudley
Lapley, Derward, Jr.
Narodick, Benjamin G.
Pemberton, Albert H.
Weisel, Wilson

NEWFOUNDLAND

St. Anthony
Thomas, Gordon W.
St. Johns
Brownrigg, Garrett M.
Littlefield, James B.

NOVA SCOTIA

Kentville.
Quinlan, John J.

ONTARIO

Hamilton
Sullivan, Herbert J.
Sudbury
Walker, George R.
Toronto
Baird, Ronald J.
Bigelow, Wilfred G.
Delarue, Norman C.
Goldman, Bernard S.
Heimbecker, Raymond O.
Joynt, George H. C.
Kergin, Frederick G.
Key, James A.
Lockwood, A. L.

Skinner, George F.

Mustard, William T.

Toronto (Continued)
Pearson, Frederick G.
Trimble, Alan S.
Trusler, George A.
Westbrook
Lynn, R. Beverley
Woodbridge
Laird, Robert

Bruneau, Jacques
Dobell, Anthony
Gagnon, Edouard D.
Grondin, Pierre
Kunstler, Walter E.
Lepage, Gilles
MacLean, Lloyd D.
McIntosh, Clarence A.
Scott, Henry J.
Vineberg, Arthur M.

QUEBEC

Montreal
Blundell, Peter E.

Quebec City
Gravel, Joffre-Andre

FOREIGN COUNTRIES

ARGENTINA

Buenos Aires
Favaloro, Rene G.

GUATEMALA

Guatemala City
Herrera, Rodolfo

BRAZIL

Sao Paulo
Zerbini, E. J.

MEXICO

Michoacan
Eloesser, Leo

GREAT BRITAIN

ENGLAND

Bristol
Belsey, Ronald
Hamden Row
Sellors, Sir Thomas Holmes
Llowes, Hereford
Thompson, Vernon
London
Brock, Russell C.

Oxford
Allison, P. R.
Surrey
Barrett, Norman R.
Warwickshire
D'Abreau, A. L.

SCOTLAND

Edinburgh
Logan, Andrew

EUROPE

HOLLAND

Amsterdam
Boerema, I.
Leiden
Brom, A. Gerard

SWEDEN

Stockholm
Bjï¿½rk, Viking Olov
Crafoord, Clarence

SWITZERLAND

Geneva
Tricerri, Fernando E.
Zurich
Senning, Ake

INDIA

Bikaner, Rajputana
Van Allen, Chester M.

AFRICA

Tunisia
Minor, George R.

CONSTITUTION AND BYLAWS

Back to Annual Meeting Program

ARTICLE I. Name

Section1. This Association shall be knownas The American Association for Thoracic Surgery.

ARTICLE II. Object

Section1. The object of the Associationshall be to encourage and stimulate investigation and study that will increasethe knowledge of intrathoracic physiology, pathology, and therapy, to correlatesuch knowledge and disseminate it.

Section2. To attain this object, theAssociation shall hold at least one scientific meeting every year in which freediscussion shall be featured; shall conduct a Journal for the publication ofthe papers presented at this meeting, and other acceptable articles; and shallundertake such other activities as the Council or the Association as a wholemay decide.

ARTICLE III. Membership

Section1. There shall be four classes ofmembers: Active, Associate, Senior and Honorary. Admission to membership in theAssociation shall be by election. Membership shall be limited, the limits onthe respective classes to be determined by the By-Laws. Only Active and SeniorMembers shall have the privilege of voting or holding elective office.

Section 2. Electionto Active, Senior, and Honorary Membership shall be for life, subject to theprovisions of Section 3, following. After the 1960 Annual Meeting of theAssociation, election to Associate Membership shall be for a limited period oftime, as determined by the By-Laws. During this limited period, an AssociateMember, if properly qualified, may be elected to Active Membership. At theexpiration of this limited period, an Associate Member, if not yet qualifiedfor Active Membership, must either be re-elected to an additional period ofAssociate Membership or be dropped from the rolls of the Association.

Section3. Membership may be voluntarilyterminated at any time by members in good standing. The Council, acting as aBoard of Censors, may recommend the expulsion of a member on the grounds ofmoral or professional delinquency, and submit his name, together with thegrounds of complaint, to the Association as a whole at any of the regularlyconvened meetings, after giving the member so accused ample opportunity toappear in his own behalf.

ARTICLE IV. Officers and Government

Section1. The officers of the Associationshall be a President, a Vice-President, a Secretary, a Treasurer, and Editor,and five Councilors. These ten officers and councilors shall be the governingbody of the Association, and shall have full power to act on all matters,except as follows:

1. They may not alter the initiation fees orannual dues, nor levy any general assessments against the membership, exceptthat they may, in individual cases, remit annual dues or assessments,
2. They may in no wise change the Constitutionor By-Laws.
3. They may neither elect new members noralter the status of existing members, other than to apply the provisions ofArticle III, Section 3.
4. They may not deplete the principal of theEndowment Fund.

Section2. Officers and Councilors shall beelected at the annual meeting of the Association, and shall take office uponconclusion of the meeting. The President and the Vice-President shall beelected for a one-year term of office and neither may be re-elected to succeedhimself in the same office. The Secretary, the Treasurer, and the Editor shallbe elected for a one-year term of office, and any or all may be re-electedindefinitely. The outgoing President shall automatically become a Councilor fora one-year term of office. The other four Councilors shall be elected, one eachyear, for a four-year term of office, but no Councilor may be re-elected tosucceed himself.

Section 3. Vacancies occurring among the officersand councilors during the year shall be temporarily filled by action of theCouncil, subject to approval of the Association at the next regularly convenedmeeting.

ARTICLE V. Committees

Section1. At the opening session of theannual meeting there shall be elected, after nomination from the floor of theAssociation, a Nominating Committee of three. This Committee shall prepare aslate of nominees for officers and councilors and shall present their report atthe Executive Session of the Association.

Section 2. TheCouncil is empowered to appoint a Membership Committee, an Auditing Committee,a Program Committee, a Necrology Committee, and such other committees as may inits opinion be necessary. All such committees shall render their report at theExecutive Session of the Association.

Section 3. TheEditor is empowered to appoint an Editorial Board, subject only to the approvalof the Council.

Section 4. The Association as a whole may authorizethe Council to appoint Scientific or Research Committees for the purpose ofinvestigating thoracic problems and may further authorize the Council tosupport financially such committees to a limited degree. In appointing suchcommittees, the Council shall be governed by the provisions of the By-Laws.

ARTICLE VI. Finances

Section1. The fiscal year of theAssociation shall coincide with a calendar year. The books of the Associationshall be kept and audited on this basis.

Section 2. Members shall contribute to the financialmaintenance of the Association through the medium of initiation fees, annualdues, and special assessments. The amount of the annual dues and the initiationfees shall be determined by the By-Laws.

If, at the end of any fiscal year, there be adeficit in the current funds of the Association, the Council may send outnotices to that effect and invite Active members to contribute the necessaryamount so that no deficit be carried over from one fiscal year to another. TheAssociation may, in any regularly convened meeting, vote a special assessmentfor any purpose consistent with the objects of the Association (Article II),and such special assessment shall become an obligatory charge against theclasses of members affected thereby.

Section 3. Tomeet the current expenses of the Association, there shall be available allrevenue derived from annual dues, special assessments, and income from theEndowment Fund, subject to the provisions of Section 4, following. Fundsderived from the payment of initiation fees shall not be available for currentexpenses.

Section4. All funds derived from thepayment of initiation fees shall be placed in a special fund, to be investedand reinvested in legal securities, to be held intact, and to be known as theEndowment Fund. The Council is responsible for the proper management of theEndowment Fund, and may divert any surplus in the current funds of theAssociation into this fund, but may not withdraw any of the principal of theEndowment Fund except in accordance with the provisions of Section 6,following.

Section 5. The income from the Endowment Fund shallbe expended as the Council directs.

Section 6. The principal of the Endowment Fund maybe withdrawn, in whole or in part, under the following conditions only: Theamount of principal to be withdrawn shall have been approved by the Council; itshall have been approved by a majority of the members present and voting at aregularly convened annual meeting; it shall have been tabled for one year; itshall have been finally passed by a three-fourths vote of the members presentand voting at the next regularly convened annual meeting.

Section 7. Inthe event of the dissolution of the Association, the Endowment Fund shall bedistributed among national institutions of the United States and Canada in aproportion equal to the then existing ratio between the numbers of citizens ofthe two nations who are members of the Association.

ARTICLE VII. Meetings

Section1. The time, place, duration, andprocedure of the annual meeting of the Association shall be determined by theCouncil, and the provisions of the By-Laws.

Section 2. Aspecial meeting of the Association may be called on one month's notice on thewritten request of fifteen members. The specific purposes of the meeting mustbe stated in the request and in the official call for the meeting.

Section 3. The annual meeting of the Council shallbe held at or near the close of the fiscal year.

ARTICLE VIII. Amendments

Section 1. This Constitution shall in no wise bechanged except by a three-fourths vote of the members present at an annualmeeting, and further provided that the proposed alteration or amendment shallhave been moved and seconded at a previous annual meeting, and that printedcopies of the suggested alteration or amendment shall have been circulatedamong the members, and that the members shall have been specifically advisedthat such alteration or amendment will be voted upon.

BY-LAWS

ARTICLE I.

Section1. These By-Laws shall merelyinterpret the Constitution and specifically apply its principles. They shallset forth no principles not included in the Constitution.

ARTICLE II.

Section1. All papers read before theAssociation shall become the property of the Association. Authors shall leaveoriginal copies of their manuscripts with the Editor or Reporter, at the timeof presentation, for publication in the official journal.

Section 2. When the number of papers makes itdesirable, the Council may require authors to present their papers in abstract,and may set a time limit on discussions.

Section 3. Members are urged to cooperate with allScientific Committees of the Association.

Section 4. Attendance at Annual Meetings andparticipation in the scientific programs shall be optional for all Honorary andSenior Members, but it shall be expected from all Active and Associate Members.

Section 5. Whilethe scientific session of the annual meeting is held primarily for. the benefitof the members of the Association, it may be thrown open to nonmembers who areable to submit satisfactory credentials, who register in a specified manner,and who pay such registration fee as may be determined and published by theCouncil from year to year.

ARTICLE III.

Section 1. Candidatesfor membership in this Association must be formally nominated and seconded, inan approved manner, by not less than three Active or Senior Members. Suchnomination must have been in the hands of the Membership Committee for not lessthan four months, and the name of the candidate must have been distributed tothe Association as a whole before final action may be taken on any newcandidate for election to Active Membership. Provided the foregoingrequirements have been met and the candidates have been approved by theMembership Committee and by the Council, their names shall be presented to theAssociation at a regularly convened annual meeting for final action. Athree-fourths vote of those present and voting shall be required to elect. Anycandidate for membership in this Association who has failed of election forthree successive years shall automatically cease to be a candidate and may notbe renominated until after a lapse of three years.

Section 2. Active Membership shall be limited to sixhundred. The candidate to be eligible must be a citizen of the United States ofAmerica or Canada, unless in unusual cases this citizenship requirement shallhave been waived by Council. The candidate shall have achieved distinction inthe thoracic field or shall have made a meritorious contribution to knowledgepertaining to thoracic disease or its surgical treatment.

Section 3. The Associate Members shall beappropriately phased out. The limited period of time for Associate Membershipas required by Article III, Section 2 of the Constitution, shall be five years.During this limited period, an Associate Member, if properly qualified, may beelected to Active Membership. After the expiration of this limited period anAssociate Member, if not yet qualified for Active Membership, must either bere-elected to an additional period of Associate Membership or dropped from therolls of the Association.

Section4. The number of Senior Membersshall be unlimited. Active Members automatically advance to Senior Membershipat the age of sixty, years. In addition, starting with the 1971 Annual Meeting,a younger Active Member may be eligible for Senior Membership if incapacitatedby disability, but for no other reason.

Section5. Honorary Membership shall bereserved for such distinguished persons as may be deemed worthy of this honorby the Council with concurrence of the Association.

Section 6. The report of the Membership Committeeshall be rendered at the annual Executive Session of the Association.Candidates shall be presented in groups in the following order: Candidates forHonorary Membership, retirement of Active Members to Senior Membership;Candidates for Active Membership, Associate Members for re-election; membersdropped from the rolls of the Association.

Section 7. The Council shall recommend that anyActive or Associate Member whose dues are in arrears for two years, or who hasbeen absent, without sufficient excuse, from three consecutive annual meetings,shall have his membership terminated.

Section 8. Notwithstanding Section 7, any member ofthe Association over 60 years of age is excused from the attendance requirementand upon his specific request may likewise be excused from the payment of dues.

ARTICLE IV.

Section1. The President of the Associationshall perform all duties customarily pertaining to the office of President. Heshall not only preside at all meetings of the Association, but also at allmeetings of the Council. The President shall be elected from the Active orSenior Members of the Association.

Section 2. The Vice-President of the Associationshall perform all duties customarily pertaining to the office of theVice-President, not only as to the Association, but also as to the Council. TheVice-President shall be elected from the Active or Senior Members of theAssociation.

Section 3. The Secretary of the Association shallperform all duties customarily pertaining to the office of Secretary. He shallserve not only as Secretary of the Association but also as Secretary of theCouncil. The Secretary shall be elected from the Active or Senior Members ofthe Association. When deemed appropriate, an Active or Senior Member may beelected to serve as an understudy to the Secretary in anticipation of thelatter's retirement from office.

Section 4. The Treasurer of the Association shallperform all duties pertaining to the office of Treasurer. He shall not onlyserve as Treasurer of the Association but shall also serve as custodian of theEndowment Fund. The Treasurer shall be elected from the Active or SeniorMembers of the Association.

Section 5. The Editor of the Association shall bethe Editor of the official Journal and shall, ex officio, be the Chairman ofthe Editorial Board. The Editor may be elected from the Honorary, Active, orSenior Members of the Association.

Section 6. The Councilors of the Association shallhold office as specified in the Constitution. They shall be elected from theActive or Senior Members of the Association.

Section 7. In the event of a vacancy occurring inthe office of President, the Council shall advance the Vice-President to thePresidency and appoint a new Vice-President under the Provisions of Article IV,Section 3, of the Constitution.

ARTICLE V.

Section1. The Nominating Committee shallconsist of three Active or Senior Members who are, by preference, also pastPresidents of the Association and in attendance at the meeting. They shall beelected in accordance with the provisions of Article V, Section 1, of theConstitution. The Council shall instruct the Committee as to the vacancieswhich are to be filled by election.

Section2. The Membership Committee shallconsist of seven Active or Senior Members appointed in accordance with theprovisions of Article V, Section 2, of the Constitution. The Council mayappoint not more than one of its own members to serve on this Committee. Theduties of the Membership Committee are to investigate all candidates formembership in the Association and to report their findings as expeditiously aspossible to the Council through the Secretary of the Association. ThisCommittee is also charged with searching the literature of this and othercountries to the end that proper candidates may be presented to the Associationfor consideration. Appointment to this Committee shall be for a period of oneyear, and not more than five of the members may be reappointed to succeedthemselves. This Committee is also charged with maintaining a record ofmembership attendance and participation in the scientific programs andreporting to the affected members and to the Council any deviations from therequirement of Article II, Section 4, of these By-Laws.

Section 3. The Auditing Committee shall consist ofthree Active or Senior Members appointed in accordance with the provisions ofArticle V, Section 2, of the Constitution. None of these may be selected fromthe officers or councilors of the Association. Their duty shall be to audit theaccounts of the Association each year and render their report to the ExecutiveSession of the Association. Appointment to this Committee shall be made for aone-year term. Not more than two members may be reappointed to succeedthemselves.

Section 4. The Program Committee shall consist offive members: The President of the Association, the Secretary of theAssociation, the Editor of the Association, and two members at large, one ofwhom shall be resident at or near the place of annual meeting. The duties ofthis Committee shall be to arrange, in conformity with instructions from theCouncil, the scientific program for the annual meeting.

Section 5. The Necrology Committee shall consist ofone or more Active or Senior Members, and shall be appointed in accordance withthe provisions of Article V, Section 2, of the Constitution. Appointments tothis Committee shall be for a one-year term of office. Any or all members ofthis Committee may be reappointed to succeed themselves. The Council may, if itso desires, appoint one of its own members to serve as Chairman of thisCommittee. The duties of the Necrology Committee shall be to prepare suitableresolutions and memorials upon the deaths of all members of the Association andto report such deaths at every annual meeting.

Section 6. The Editorial Board shall be appointed bythe Editor, subject only to the approval of the Council. The Editor shall be,ex officio, the chairman of this board and shall be privileged to appoint andindefinitely reappoint such members of the Association, regardless of class ofmembership, and such non-, members of the Association as in his opinion may bebest calculated to meet the editorial requirements of the Association.

Section 7. When Scientific or Research Committeesare authorized by the Association, the Council shall appoint the Chairmen ofthese Committees, with power to organize their committees in any way bestcalculated to accomplish the desired object, subject only to the approval ofthe Council. Financial aid rendered to such Committees shall not exceed suchannual or special appropriations as may be specifically voted for such purposesby the Association as a whole.

Section 8. TheEvarts A. Graham Memorial Traveling Fellowship Committee shall consist of sixmembers: The President, Secretary, and Treasurer of the Association and threemembers-at-large, one member being appointed by the President each year toserve a term of three years. The Chairman shall be the member-at-large servinghis third year. The duties of the committee shall be to recommend Fellowshipcandidates to the Council, and to carry out all business pertaining to theFellowship and the Fellows, past, present, and future.

Section9. The Ethics Committee shallconsist of five members appointed by the Council. No member shall serve morethan four years. The Ethics Committee shall advise the Council concerningalleged breaches of ethics. Complaints regarding alleged breaches of ethicsshall be received in writing by the Ethics Committee and shall be investigatedby it. In addition, the Ethics Committee may investigate on its own initiative.

ARTICLE VI.

Section1. Honorary Members of theAssociation are exempt from all initiation fees, dues, and assessments.

Section 2. Annual dues for Active Members shall be$50.00.

Section 3. Annual dues for Associate Members shallbe $50.00.

Section 4. Senior Members are exempt from dues.

Section 5. Initiation fee for those elected directlyto Active Membership shall be $15.00.

Section 6. If and when an Associate Member iselected to Active Membership, he shall pay an additional $5.00 initiation fee.

Section 7. Income from the Endowment Fund shall beexpended as the Council directs.

Section 8. Associate and Active Members mustsubscribe to THE JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY to retain theirmembership status.

Section 9. Senior Members may retain theirmembership status without the payment of annual dues, and subscription to THEJOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY is optional.

(NOTE. Bills formembership dues and for subscriptions to THE JOURNAL OF THORACIC AND CARDIOVASCULARSURGERY will be mailed to members by the Treasurer after the annual meeting.)

ARTICLE VII.

Section1. When the Association convenes forits annual meeting, it shall immediately go into executive session, but thebusiness at this session shall be limited to:

1. Election of Nominating Committee.
2. Appointment of necessary committees.
3. Miscellaneous business of an urgent nature.

Section2. The annual executive session ofthe Association shall be held at the opening of the afternoon session of thesecond day of the meeting. The order of business shall be:

1. Reading of the minutes of the precedingmeetings of the Association and Council.

2. Report of the Treasurer for the last fiscalyear.

3. Report of the Auditing Committee.

4. Report of the Treasurer for the currentyear to date.

5. Report of the Necrology Committee.
6. Report of the Program Committee.

7. Action on amendments to the Constitution and By-Laws.
8. Action on recommendations emanating fromthe Council.

9. Unfinished Business.

10. New Business.

11. Report of the Membership Committee.

12. Election of new members.

13. Report of the Nominating Committee.

14. Election of officers.

Section3. There shall be an annual meetingof the Council.

ARTICLE VIII.

Section1. These By-Laws shall in no wise bechanged except by a two-thirds vote of the members present at the annualmeeting or a properly convened meeting of the Association, and further providedthat the proposed action or amendment shall have been moved and seconded by notless than three of the members in a properly convened annual or special meetingof the Association.

Section 2. These By-Laws may be suspended in wholeor in part for a period of not more than twelve hours by a unanimous vote ofthose present at any regularly convened meeting of the Association.

CHARTER MEMBERS

Back to Annual Meeting Program

E. Wyllis Andrews Arthur A. Law
John Auer WilliamLerche
Edward R. Baldwin Howard Lilienthal
Walter M. Boothby William H. Luckett
William Branower Morris Manges
Harlow Brooks Walton Martin
Lawrason Brown Rudolph Matas
Kenneth Bulkley E. S. McSweeney
Alexis Carrel Samuel J. Melter
Norman B. Carson Willy Meyer (Founder)
I. Frank Corbett James Alexander Miller
Armistead C. Crump Robert T. Miller
Charles N. Dowd Fred J. Murphy
Kennon Dunham Leo S. Peterson
Edmond Melchior Eberts Eugene H. Pool

Max Einhorn Walther I. Rathbun
Herman Fischer Martin Rehling
Albert H. Garvin B. Merrill Ricketts
Nathan W. Green Samuel Robinson
John R. Hartwell Charles I. Scudder
George J. Heuer William H. Stewart
Chevalier Jackson Franz Torek
H. H. Janeway Martin W. Ware
James H. Kenyon Abraham O. Wilensky
Adrian V. S. Lambert SidneyYankauer

PAST MEETINGS AND PRESIDENTS

Back to Annual Meeting Program

1918 - ChicagoPresident, Samuel J. Meltzer
1919 - Atlantic City..... President, Willy Meyer
1920 - New OrleansPresident, Willy Meyer
1921 - Boston..... President, Rudolph Matas
1922 - WashingtonPresident, Samuel Robinson
1923 - Chicago..... President, Howard Lilienthal
1924 - Rochester, Minn... President, Carl A. Hedblom
1925 - WashingtonPresident, Nathan W. Green
1926 - MontrealPresident, Edward W. Archibald
1927 - New York.. President, Franz Torek
1928 - WashingtonPresident, Evarts A. Graham
1929 - St. LouisPresident, John L. Yates
1930 - Philadelphia..... President, Wyman Whittemore
1931 - San Francisco. President, Ethan Flagg Butler
1932 - Ann Arbor..... President, Frederick T. Lord
1933 - WashingtonPresident, George P. Muller
1934 - BostonPresident, George J. Heuer
1935 - New York... President, John Alexander
1936 - Rochester, Minn... President, Carl Eggers
1937 - Saranac Lake.... President, Leo Eloesser
1938 - Atlanta. President, Stuart W. Harrington

1939 - Los AngelesPresident, Harold Brunn
1940 - ClevelandPresident, Adrian V. S. Lambert
1941?TorontoPresident, Fraser B. Gurd
1944 - Chicago. President, Frank S. Dolley
1946 - DetroitPresident, Claude S. Beck
1947 - St. Louis.... President, I. A. Bigger
1948 - Quebec. President, Alton Ochsner
1949 - New OrleansPresident, Edward D. Churchill
1950 - DenverPresident, Edward J. O'Brien
1951 - Atlantic City..... President, Alfred Blalock
1952 - Dallas. President, Frank B. Berry
1953 - San FranciscoPresident, Robert M. Janes
1954 - Montreal.. President, Emile Holman
1955 - Atlantic City..... President, Edward S. Welles
1956 - Miami Beach. President, Richard H. Meade
1957 - Chicago..... President, Cameron Haight
1958 - Boston.. President, Brian Blades
1959 - Los Angeles..... President, Michael E. De Bakey
1960 - Miami Beach. President, William E. Adams
1961 - Philadelphia... President, John H. Gibbon, Jr.
1962 - St. Louis..... President, Richard H. Sweet(Deceased 1-11-62)
President,O. Theron Clagett
1963 - Houston. President, Julian Johnson
1964 - MontrealPresident, Robert E. Gross
1965 - New OrleansPresident, John C. Jones
1966 - Vancouver, B. C.President, Herbert C. Maier
1967 - New York..... President, Frederick G. Kergin
1968 - PittsburghPresident, Paul C. Samson
1969 - San FranciscoPresident, Edward M. Kent
1970 - Washington, D. C..... President, Hiram T. Langston
1971 - Atlanta..... President, Thomas H. Burford
1972 - Los Angeles... President, John W. Strieder
1973 - Dallas. President, Frank Gerbode