

MONDAY AT-A-GLANCE

6:30 a.m. – 5:00 p.m.	Registration: STS Annual Meeting
7:30 a.m. – 7:45 a.m.	Opening Remarks
7:45 a.m. – 8:45 a.m.	General Scientific Session I: J. Maxwell Chamberlain Memorial Paper Presentations: Abstracts #1-3
8:45 a.m. – 8:55 a.m.	Introduction of New Members
8:55 a.m. – 9:00 a.m.	STS Historian Report
9:00 a.m. – 4:30 p.m.	STS Exhibits and Scientific Poster Session Opens
9:00 a.m. – 9:15 a.m.	Award Presentations: Earl Bakken Award TSDA/TSFRE Award Socrates Award Geriatric Patient Care Award
E 9:15 a.m. – 10:00 a.m.	Break – Please Visit Exhibits
10:00 a.m. – 11:00 a.m.	Thomas B. Ferguson Lecture
11:00 a.m. – 12:00 p.m.	Presidential Address
E 12:00 p.m. – 1:30 p.m.	Please Visit Exhibits
R 12:00 p.m. – 1:15 p.m.	Thoracic Surgery Residents' Association Meeting
1:30 p.m. – 3:30 p.m.	Parallel Surgical Forum I: Adult Cardiac I Oral Presentations: Abstracts #4-11 Parallel Surgical Forum II: Adult Cardiac II Oral Presentations: Abstracts #12-19 Parallel Surgical Forum III: General Thoracic Oral Presentations: Abstracts #20-27 Parallel Surgical Forum IV: Congenital Oral Presentations: Abstracts #28-35 Parallel Surgical Forum V: Practice Education Symposium
E 3:30 p.m. – 4:15 p.m.	Break – Please Visit Exhibits
4:15 p.m. – 6:00 p.m.	Business Meeting (STS Members Only)
7:00 p.m. – 9:00 p.m.	Surgical Motion Pictures
7:00 p.m. – 9:00 p.m.	STS Workforce on International Relationships Symposium

GENERAL SESSION I: MONDAY, JANUARY 29, 2007

Unless otherwise noted in this program book or verbally by the speakers, speakers have no relevant financial relationships to disclose and will only be presenting information on devices, products or drugs that are FDA-approved for the purposes they are discussing.

7:45 a.m. – 8:05 a.m.

► **I. J. Maxwell Chamberlain Memorial Paper for Congenital Heart Surgery: Surgical Lessons from the First 100 Fontan Conversions with Arrhythmia Surgery**

*C. Mavroudis; B. J. Deal; *C. L. Backer; *R. D. Stewart; W. H. Franklin; K. Ward; S. Tsao
Children's Memorial Hospital, Chicago, Illinois

Discussant: *Joseph A. Dearani, Rochester, Minnesota

Background: The purpose of this report is to examine how our strategy has evolved during 100 consecutive Fontan conversions with arrhythmia surgery (FCAS) and pacemaker therapy.

Methods: Since 1994, 100 consecutive patients, mean age 21.5 ± 8 years, underwent FCAS. The greater majority ($n=94$) had extracardiac total cavopulmonary connections. Associated procedures included atrioventricular valve repair/replacement ($n=18$), pulmonary arterioplasty ($n=19$), coronary sinus unroofing to relieve left pulmonary vein obstruction ($n=2$), and aortic valve replacement ($n=2$). Surgical modifications included simplified takedown of atriopulmonary Fontans, aggressive dissection of atrioventricular groove to facilitate arrhythmia surgery and atrial reduction, removal of all intracardiac baffles or atrioventricular valve patches to improve cryoablation, and inclusion of any remnant right ventricle into pulmonary circulation. After early isthmus ablation failure, modified right atrial maze was routinely performed except for atrial fibrillation (biatrial maze). Intraoperative electrophysiologic evaluation led to identification of left-sided atrial reentry tachycardia for which biatrial maze was performed. All patients had pacemaker therapy which has evolved into dual chamber antitachycardia pacemakers with bipolar steroid-eluting epicardial leads.

Results: There was one early death (1%) and 5 late deaths (5%). Renal failure requiring dialysis occurred in 5 patients (5%) and 5 patients required transplantation (5%). Mean hospital stay was 13.7 ± 12.2 days. Recurrent atrial tachyarrhythmias occurred in 11 (11%); 8 of the initial 50 (16%) and 3 of the last 50 patients (6%, $p=0.2$).

Conclusions: Fontan conversion with arrhythmia surgery and pacemaker therapy is safe and efficacious for patients with failing Fontans. Lessons learned from the first 100 operations have improved outcomes.

NOTES

MONDAY MORNING

8:05 a.m. – 8:25 a.m.

► **2. J. Maxwell Chamberlain Memorial Paper for General Thoracic Surgery: Are Surgical Outcomes for Lung Cancer Resections Improved at Academic Institutions?**

R. A. Meguid; B. S. Brooke; D. C. Chang; *S. C. Yang

Johns Hopkins University School of Medicine, Baltimore, Maryland

Discussant: *Carolyn E. Reed, Charleston, South Carolina

Background: Focus on defining centers of excellence for high-risk surgical procedures, including pulmonary resection, reveals improved mortality rates at high-volume centers. We postulate that short-term post-operative outcome is improved in lung cancer resections at academic medical centers (AMCs) vs. non-AMCs, in addition to high-volume centers.

Methods: Patients aged 18-85 undergoing pulmonary resection for lung cancer were identified in the Nationwide Inpatient Sample dataset from 1998-2003 (20% sample of hospitals in 37 states). Patients were stratified by extent of resection (segmentectomy, lobectomy, and pneumonectomy). Independent association of AMC status on in-hospital mortality was assessed via multivariate logistic regression. Covariates included patient demographics, case-volume, and Charlson Index comorbidities.

Results: 50,867 lung resections were identified in this dataset (8,144 segmentectomies, 37,822 lobectomies, 4,901 pneumonectomies; 46.3% female, mean age 64 ± 12 years). 55.2% of resections were performed at AMCs. Overall mortality rate for pulmonary resections was 3.82%, with decreased mortality at AMCs vs. non-AMCs (3.63% vs. 4.0%; $p=0.016$). When stratified by procedure only, the difference in mortality rate for lobectomies at AMCs vs. non-AMCs was significant [2.94%(609/20,740) vs. 3.62%(620/17110); $p<0.001$]. On multivariate logistic regression analysis, controlling for confounders including case-volume, undergoing lobectomy at AMCs independently reduced the odds of mortality by 17% [OR(95%CI)=0.83(0.71-0.98), $p=0.026$] vs. undergoing lobectomy at non-AMCs.

Conclusions: Mortality is reduced in lung cancer patients undergoing lobectomy at AMCs, independent of hospital volume. Dissemination of these data to referring physicians would result in improved quality of care for lung cancer patients. Further research is needed to better define centers of excellence for high risk surgical procedures.

NOTES

MONDAY MORNING

8:25 a.m. – 8:45 a.m.

3. **J. Maxwell Chamberlain Memorial Paper for Adult Cardiac Surgery: Off-pump Techniques Benefit Both Men and Women and Narrow the Gender Disparity in Mortality After Coronary Artery Bypass Surgery: An Intention-to-Treat Analysis of The Society of Thoracic Surgeons National Cardiac Database**

*J. D. Puskas¹; *F. H. Edwards²; P. Pappas³; S. O'Brien³; E. M. Peterson⁴; P. Kilgo I; *T. B. Ferguson⁵
¹Emory University, Atlanta, Georgia; ²University of Florida, Jacksonville, Florida; ³Duke Clinical Research Institute, Durham, North Carolina; ⁴Duke University School of Medicine, Durham, North Carolina; ⁵Eastern Carolina University, Greenville, North Carolina

Financial Disclosure: J.D. Puskas, Medtronic, MCRI, St. Jude, Guidant, Cardiogenesis, NHLBI, Cardica, Research Grant (principal investigator; collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Scanlan, Guidant, Consultant/Advisory Board; P. Pappas, STS statistician, Employment (full or part-time); STS, Research Grant (principal investigator; collaborator or consultant and pending grants as well as grants already received); S. O'Brien, STS, Research Grant (principal investigator; collaborator or consultant and pending grants as well as grants already received); E.M. Peterson, STS, Research Grant (principal investigator; collaborator or consultant and pending grants as well as grants already received); T.B. Ferguson, AHRQ, Novadaq Technologies, Inc, Research Grant (principal investigator; collaborator or consultant and pending grants as well as grants already received); Medtronic, Inc; BioVascular, Inc; UHC, Inc, Consultant/Advisory Board.

Discussant: *Bruce W. Lytle, Cleveland, Ohio

Financial Disclosure: B. W. Lytle, Edwards, St. Jude, Medtronic, Viacor, Research Grant Support, Research Grant (e.g. principal investigator; collaborator or consultant and pending grants as well as grants already received).

Background: Women have historically suffered greater morbidity and mortality than men after conventional coronary artery bypass grafting (CABG) on cardiopulmonary bypass (CPB). It is controversial whether off-pump CABG (OPCAB) alters this gender-based disparity.

Methods: The Society of Thoracic Surgeons National Cardiac Database was reviewed for risk factors and clinical outcomes of 42,477 consecutive, non-emergent, isolated, primary CABG/CPB or OPCAB cases performed at 63 North American centers which performed more than 100 OPCAB cases between January 1, 2004 and December 31, 2005. Odds ratios (OR) for adverse events, adjusted for 30 clinical and demographic covariates, were compared by saturated multiple logistic regression models between women and men who had OPCAB versus CABG/CPB. All analyses were by intention-to-treat; patients converted from OPCAB to CABG/CPB or CABG/CPB to OPCAB intraoperatively were included in their originally intended group.

Results: Female patients (n=11,785) and those treated with OPCAB (n=16,245) were older, had more comorbidities and higher predicted risk than male patients (n=30,662) and those treated with conventional CABG/CPB (n=26,202), respectively. In both men and women, adjusted OR for death and most major complications were significantly lower with OPCAB than with CABG/CPB. Among CABG/CPB cases only, women had a significantly greater adjusted risk of death, prolonged ventilation and long LOS than men (TABLE). In contrast, among OPCAB cases, women had outcomes similar to men except higher stroke risks.

Event	Off vs. On (in males)	Off vs. On (in females)	Female vs. Male (on-pump patients)	Female vs. Male (off-pump patients)
Death	0.86	0.75*	1.45#	1.27
Stroke	0.56#	0.72*	1.19	1.54*
MI	0.64#	0.61#	1.19	1.14
Reoperation	0.82#	0.71#	0.98	0.85
Prolonged Ventilation	0.80#	0.64#	1.25#	1.00
LOS > 14 days	0.72#	0.65#	1.16*	1.05

*p<.05 #p<.01

Conclusions: OPCAB is associated with fewer major adverse cardiac events and may benefit women disproportionately, thereby neutralizing some of the gender disparity in clinical outcomes after CABG.

NOTES

PARALLEL SURGICAL FORUM I: ADULT CARDIAC I

Monday, January 29, 2007, 1:30 p.m. - 3:30 p.m.

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1:30 p.m. – 1:45 p.m.

4. Current Eighteen Month Clinical Outcomes of Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting: The CARE (Coronary Artery Revascularization) Study

*M. J. Mack¹; *P. Brown²; *M. Katz²; *G. Palmer²; *J. R. Edgerton¹; S. L. Prince¹; E. Eichhorn²; M. A. Herbert³

¹Cardiopulmonary Research Science and Technology Institute, Dallas, Texas; ²CARE Task Force, Dallas, Texas; ³Medical City Dallas Hospital, Dallas, Texas

Financial Disclosure: M.J. Mack, Guidant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); HCA Corp., Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Introduction: Many randomized trials have compared coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI). However, results of these trials in select patients may not accurately reflect current clinical practice using drug-eluting stents and off-pump CABG. We undertook a registry of coronary revascularization to determine clinical outcomes of current techniques.

Methods: All patients undergoing isolated coronary revascularization in 8 community-based hospitals were prospectively enrolled in a centralized database. All pre-, intra-, and post-procedural data were captured, with outcomes obtained at 18 months by patient and physician contact and utilizing the National Death Index. Approximately 30% of the patients also filled out SF-12 questionnaires at 12 months.

Results: There were 4352 patients enrolled, 3098 (71.2%) with PCI and 1252 (28.8%) CABG. Drug-eluting stents were used in 2353/3098 (76.0%) of the PCI patients; off-pump CABG performed in 577/1252 (46.1%) patients. The PCI and CABG patient groups were similar with no statistical differences in gender, age, race, renal failure and diabetes. The PCI group had a higher mean ejection fraction ($53 \pm 16\%$ vs $50 \pm 12\%$; $p < 0.001$), and statistically higher rates of previous PCI, valve and CABG procedures. Eighteen month follow-up has been obtained on 79.2% (2453/3098) of the PCI, and 78.5% (983/1252) of the CABG patients.

Conclusions: Eighteen month outcomes show that patients undergoing initial PCI have significantly higher rates of repeat revascularization than those undergoing CABG, resulting in significantly more events overall. Patients score nearly one standard deviation higher on both the SF-12 Physical and Mental sections compared to norms for heart disease patients.

Eighteen Month Events

	CABG	PCI	pValue
Cardiac Death (Overall)	5.6%	6.0%	0.62
0 - 30 days	2.1%	1.5%	0.17
>31 days	3.5%	4.6%	0.15
MI	1.4%	1.9%	0.32
Repeat Target Vessel Revascularization			
With CABG	0.5%	2.2%	<0.001
With PCI	5.5%	9.3%	<0.001
MACE (Major Adverse Cardiac Events)	13.0%	19.4%	<0.001
SF-12 Physical Score (Heart Disease Norm = 38.8 + 10.0)	46.0 + 11.7	44.9 + 10.9	0.11
SF-12 Mental Score (Heart Disease Norm = 48.3 + 10.1)	54.8 + 8.2	54.4 + 8.8	0.44

NOTES

1:45 p.m. – 2:00 p.m.

5. Does Choice of Arterial Graft Influence Long Term Clinical Outcomes After Coronary Revascularization? Results of a Radial Artery vs. Right Internal Thoracic Artery Trial

P.A. Hayward¹; S. Moten¹; I. Gordon¹; G. Matalanis¹; D. Hare¹; *B. F. Buxton¹

¹Austin Hospital, Melbourne, Australia; ²Statistical Consulting Centre of University of Melbourne, Melbourne, Australia

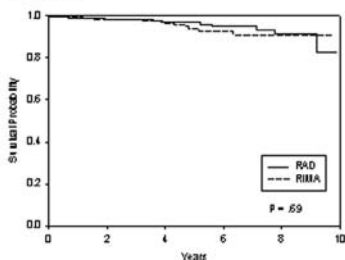
Background: To investigate the optimal revascularisation conduit for coronary territories other than that of the left anterior descending artery, long-term clinical outcomes following use of a radial artery (RA) or right internal thoracic artery (RITA) were evaluated as part of the Radial Artery Patency and Clinical Outcomes (RAPCO) study.

Methods: As part of a 10-year prospective, randomized, single-center trial, patients aged <70 years undergoing primary coronary surgery, were randomly allocated to use of RA (n=198) or free RITA (n=196) for grafting the largest target other than LAD. Annual follow up documented death, myocardial infarction or revascularisation as primary endpoints (1 patient lost). Analysis was on an intention-to-treat basis.

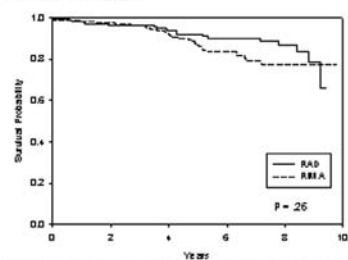
Results: There were no significant differences in the preoperative status of the two groups including age, gender, diabetes mellitus, hypertension, urgency of surgery. 186 of 198 patients in the RA group and 179 of 196 patients in the RITA group received the intended conduit. Mean number of grafts was 3.1±0.8 and 3.2±0.9 in the RA and RITA groups respectively. During surveillance of up to 9.8 years, mean 5.3 years, absolute survival and event free survival was equivalent between groups, with 10 versus 12 deaths and 20 versus 28 events in the RA and RITA groups respectively (log ranks: p=0.69 for survival, p=0.26 for event free survival).

Conclusions: These 2 arterial conduits may yield equivalent clinical outcomes at 5 years. This will be compared with mean 5 year angiographic patency when available. For now, equivalent clinical results offer surgeons flexibility in planning revascularization.

A. Survival



B. Event Free Survival



RAD	197	196	162	142	127	105	72	61	32	11	0
RIMA	196	194	176	153	130	104	70	54	33	15	0

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MONDAY AFTERNOON

2:00 p.m. – 2:15 p.m.

6. Comparison Between Surgical Arterial Revascularization and Drug Eluting Stents in Patients with Diabetes Mellitus

Y. Ben-Gall¹; B. Medalion²; Y. Moshkovitz³; I. Herz¹; N. Hansson¹; *G. Uretzky¹; R. Mohr¹

¹Tel Aviv Sourasky Medical Center, Tel-Aviv, Israel; ²Rabin Medical Center - Beilinson Campus, Petah Tikva, Israel; ³Assuta Medical Center, Petah Tikva, Israel

Background: Reduction of re-stenosis and re-intervention was recently reported with the introduction of drug-eluting stents (DES). This study compares mid-term outcome of surgical arterial revascularization in patients with diabetes mellitus to that of percutaneous interventions (PCI) incorporating DES (Cypher).

Methods: One hundred and forty two diabetic patients who underwent arterial revascularization between May 2002 and December 2005 were compared with 172 diabetics who underwent Cypher stenting. Single-vessel patients in the surgical group were treated with left internal thoracic artery (ITA), and most multi-vessel patients were treated with two ITAs. After performing propensity score with patients' characteristics, COX regression was used in order to evaluate predictors of outcome events.

Results: Follow-up ranged between 6-49 months. Thirty months survival (Kaplan-Meier) of the two groups was similar (97% and 98% for the surgical and Cypher groups, respectively, $p=0.65$). However, angina-free survival (88% vs 66% respectively, Log Rank $p<0.001$) and re-intervention-free survival (96% vs 89%, $p=0.006$) were better in the surgical group. Assignment to the Cypher group (OR 4.3, 95% CI 1.4-14.3) and right coronary revascularization (all bare metal stents in the PCI group) (OR 2.7, CI 1.1-6.7) were independent predictors of re-intervention. Assignment to the Cypher group was the only predictor of angina recurrence (OR 6.7, 95% CI 3.3-12.5). Single vessel disease had a protective effect for re-angina (OR 0.4, 95% CI 0.18-6.77).

Conclusions: Outcome of diabetic patients who underwent surgical arterial revascularization is better than that of PCI patients treated with DES.

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MONDAY AFTERNOON

2:15 p.m. – 2:30 p.m.

7. Preoperative Statin Use Decreases Operative Mortality in High Risk Coronary Artery Bypass Patients

*J. Magovern; K. Simpson; *D. H. Benckart; *G. Marrone; *T. Maher; *D. Dean; *G. Magovern, Jr. Allegheny General Hospital, Pittsburgh, Pennsylvania

Background: Statins are widely prescribed to patients with atherosclerosis. Database analysis was used to examine changes in preoperative statin use, as well as its effect on mortality over a 5-year period of patients undergoing coronary artery bypass grafting (CABG).

Methods: 2,377 patients had isolated CABG at Allegheny General Hospital from 2000-2004. Mean age was 65 ± 11 years, (70%) male, (5%) redo operations, and (4%) emergencies. Both univariate analysis (Chi2, Fisher's Exact and Student's t-tests) and multivariate linear regression were used to determine differences.

Results: Incidence of preoperative statin use gradually increased from 38% in 2000 to 45% in 2004. There was no significant preoperative difference between the groups: predicted operative risk (2%), female gender (30%), redo operations (6%), emergency operation (4%), or diabetes mellitus (30%). Overall operative mortality was 2.4%, but was 1.7% for statin users and 2.8% for non-statin users ($p < 0.05$). Univariate predictors of mortality were emergency surgery; redo operation, preoperative renal insufficiency, insulin dependent diabetes, and no statins ($p < 0.05$). In multivariate analysis lack of statin use was a significant predictor of mortality in high-risk patients ($n = 245$, 12.9% vs. 5.6%, $p < 0.05$).

Conclusions: Despite widespread use, <50% of CABG patients were receiving statins before surgery at AGH, where many patients present with unstable coronary syndromes. Preoperative statin use is associated with lower operative mortality in high-risk patients. The mechanism is not known but may reflect the pleiotropic properties of statins.

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MONDAY AFTERNOON

2:30 p.m. – 2:45 p.m.

8. The Impact of Heparin-Induced Thrombocytopenia on Postoperative Outcomes Following Cardiac Surgery

*F. Kerendi; *O. M. Lattouf; *J. D. Puskas; *V. H. Thourani; *R. A. Guyton*
Emory University, Atlanta, Georgia

Financial Disclosure: O.M. Lattouf, Guidant, MCRI, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); J.D. Puskas, MCRI, St Jude, Guidant, Cardiogenesis, NHLBI, Cardica, Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Scanlan, Guidant, Consultant/Advisory Board; V.H. Thourani, Medtronic, Coulter Foundation, Edwards, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); R.A. Guyton, Guidant, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Consultant/Advisory Board.

Background: To determine the effect of heparin-induced thrombocytopenia (HIT) on postoperative morbidity and mortality after cardiac surgery and to identify preoperative risk factors for HIT.

Methods: From 2002-2005, 492 cardiac surgery patients with postoperative thrombocytopenia (50% drop in platelet count) underwent testing for HIT platelet factor 4 antibodies. Risk factors and outcomes of patients with a positive HIT assay (HIT+) were compared to patients with thrombocytopenia but without HIT antibodies.

Results: 19.9% of patients (98/492) were HIT+. Among HIT+ patients there was a higher preoperative incidence of infectious endocarditis (8.2% vs. 2.5%, $p=0.014$, Fisher's Exact Test) and urgent/emergent cases (44.9% vs. 33%, $p=0.033$). Other risk factors were similar between the two groups, including previous cardiac/vascular surgery or percutaneous interventions. Postoperative infections occurred more frequently in HIT+ patients, including sepsis (19.4% vs. 9.6%, $p=0.012$) and pneumonia (53.1% vs. 23.1%, $p<0.001$). HIT+ patients also had a higher rate of stroke (11.2% vs. 5.6%, $P=0.046$), renal failure requiring hemodialysis (27.6% vs. 8.6%, $p<0.001$), and acute limb ischemia (19.4% vs. 4.1%, $p<0.001$). Thirty-day mortality was significantly higher in the HIT+ group (25.5% vs. 15.2%, $p=0.024$).

Conclusions: HIT+ patients suffered significantly more complications than patients with similar thrombocytopenia and a negative HIT panel. Greater awareness of this devastating problem may allow earlier detection of HIT and institution of appropriate therapy, which may limit the associated morbidity and mortality.

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MONDAY AFTERNOON

2:45 p.m. – 3:00 p.m.

9. Delays Worsen In-Hospital Mortality After Coronary-Artery Bypass Grafting

B. Sobolev¹; *G. Fradet¹; R. Hayden²; A. Levy¹

¹University of British Columbia, Vancouver, British Columbia, Canada; ²Royal Columbian Hospital, New Westminster, British Columbia, Canada

Background: Currently there are no direct estimates of in-hospital mortality reduction afforded by undergoing coronary-artery bypass grafting (CABG) within the recommended time in health systems that use priority waiting lists to manage access to elective surgery.

Methods: We used a population-based registry to identify patients with established coronary artery disease who were to undergo first-time isolated CABG in British Columbia, Canada. We studied whether survival during hospital admission differed significantly among patients who waited for CABG longer than the recommended time, six weeks for semi-urgent patients and twelve weeks for those in the non-urgent group.

Results: Among 7,316 patients who underwent CABG, 97 patients died postoperatively during the same hospital admission, giving a province-wide death rate at discharge of 1.3%. The observed (unadjusted) proportion of in-hospital deaths was lower in patients treated within a recommended time than in those whose CABG was delayed (1.0% [27 deaths in 2,675 patients] vs. 1.5% [70 in 4,641], $P = 0.07$). The odds of in-hospital death were 39% lower in those who underwent early (as opposed to late) CABG, the adjusted odds ratio 0.61 (95% confidence interval, 0.39 to 0.96). The adjusted odds of in-hospital death increased by 5% for every additional month of delay in undergoing surgery, OR = 1.05 (95% confidence interval, 1.01 to 1.11).

Conclusions: We found a significant survival benefit of performing early surgical revascularization for patients judged to be at lower risk of death at the time of the decision to treat.

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MONDAY AFTERNOON

3:00 p.m. – 3:15 p.m.

10. Sequential Hybrid Carotid and Coronary Artery Revascularization Sharp Trial: Immediate and Midterm Results

F. Versaci¹; C. Del Giudice²; P. Nardi³; R. Gandini³; E. Pampana³; A. Pellegrino²;
A. Salvati²; J. Zeitani²; G. Simonetti³; *L. Chiariello²

¹Cardiology Tor Vergata University, Rome, Italy; ²Cardiac Surgery Tor Vergata University, Rome, Italy; ³Radiology Tor Vergata University, Rome, Italy

Background: The aim of the study is to assess the technical feasibility and safety of a sequential hybrid carotid artery stenting (CAS) and coronary artery bypass grafting (CABG).

Methods: Between February 2004 and May 2006, 60 (7.5%) out of 800 patients referred to our Department for CABG had significant concomitant coronary and carotid artery disease. Of these 37 patients (30 males), aged 54-88 (mean age 70,3±8.5) years, with high risk for combined or staged carotid endarterectomy-CABG or CAS-CABG operation were treated. All patients underwent CAS with distal filter protection. Aspirin 100 mg a day had to be started two days before the procedure. At the end of CAS, all patients were transferred to the operating room, where the planned CABG interventions were performed with normothermic cardiopulmonary bypass. Clopidogrel (300 mg as a loading dose, followed by 75 mg a day for a month) was started in the Intensive care unit, 6 hours after the end of CABG, provided that bleeding from the thoracic drainages had stopped. All patients were followed-up every 6 months clinically and by ultrasonography (mean follow-up 10,3±5,3 months, range 1-22).

Results: All patients underwent successful CAS. One patient had stroke and one patient a transient ischemic attack immediately after the CAS (5,4%). There were 2 (5,4%) in hospital deaths by cardiac failure. Event-free survival at the follow-up was 94,6%.

Conclusions: In patients with combined carotid and coronary disease at high surgical risk the proposed hybrid approach seems to be an alternative therapeutic strategy.

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MONDAY AFTERNOON

3:15 p.m. – 3:30 p.m.

11. A Simple Index to Predict Likelihood of Skilled Nursing Facility Admission After CABG Among Older Patients

D. C. Chang; D. L. Joyce; A. Shoher; *D. D. Yuh

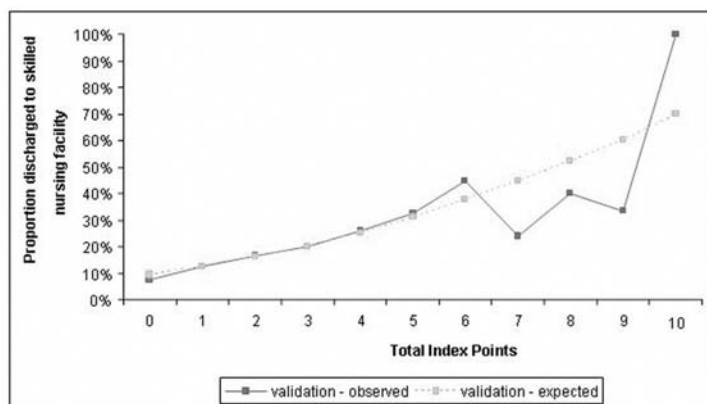
Johns Hopkins Hospital, Baltimore, Maryland

Background: Acceptable short-term mortality rates for elderly patients undergoing coronary artery bypass grafting (CABG) are reported in the literature. Elderly patients considering CABG also fear a post-operative loss of functional independence. We describe an index that predicts a patient's likelihood of admission to a skilled nursing facility (SNF) after CABG to address this concern.

Methods: Logistic regression analysis of the California hospital discharge database over a 5 year period was performed to identify the most prevalent preoperative ICD-9 diagnoses associated with SNF admission after primary CABG in patients 65 years or older. Each diagnosis was weighted according to odds ratios to develop an index that predicts the likelihood of discharge to a SNF. The index was validated using our institutional database.

Results: 26,040 patients fit our criteria with a mean age of 74.2 years (32.8% women), an in-hospital mortality rate of 3.09%, and a 17.3% SNF discharge rate. Our index was a summation of 9 selected preoperative ICD-9 diagnoses, each assigned a 1- (osteoarthritis, congestive heart failure, atrial fibrillation, myocardial infarction, anemia, obesity) or 2-point value (female, COPD, renal failure). Patients with scores of 3 or less were considered "low-risk," being 60% less likely for SNF discharge than "high-risk" patients with scores of 4 and above. Validation analysis produced ROC and pseudo r^2 values of 0.6435 and 0.0408, respectively (Figure).

Conclusions: We describe a simple index to identify older patients at low- and high-risk for SNF admission after CABG. Such tools may be useful in counseling older patients considering CABG.



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MONDAY AFTERNOON

PARALLEL SURGICAL FORUM II: ADULT CARDIAC II

Monday, January 29, 2007, 1:30 p.m. - 3:30 p.m.

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1:30 p.m. – 1:45 p.m.

12. Hemodynamic and Echocardiographic Effects of Temporary Biventricular Pacing Immediately Post Cardiopulmonary Bypass for Patients With Chronic Heart Failure

J. D. Muehlschlegel¹; E. B. Lobato²; *P. J. Hess, Jr.²; *T. D. Martin²; Y. G. Peng²;

*C. T. Klodell, Jr.²

¹Brigham and Women's Hospital, Boston, Massachusetts; ²University of Florida, Gainesville, Florida

Background: Chronic biventricular (BV) pacing improves left ventricular (LV) function in patients with low ejection fraction during resynchronization therapy. We aimed to analyze the acute effects of biventricular pacing versus single ventricle lead pacing on hemodynamics and left ventricular function immediately following cardiopulmonary bypass.

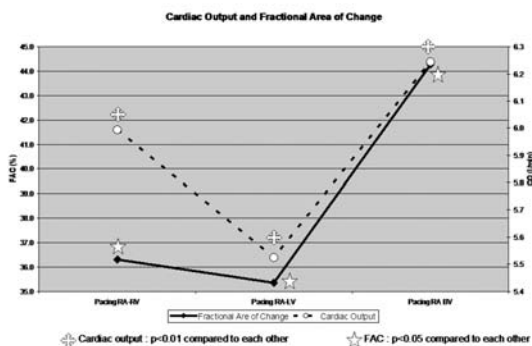
Methods: Ten patients with a mean ejection fraction of 35% underwent open heart surgery involving cardiopulmonary bypass (CPB). Temporary pacing electrodes were placed on the right atrium, apex of the right ventricle (RV), and lateral wall of the LV prior to separation from CPB. After separation, the hemodynamic effects of three atrio-ventricular pacing modes were studied for 4 minutes each. The random pacing modes differed in the site of ventricular stimulation and were RV, LV and BV. Hemodynamic and echocardiographic data were collected. Statistical analysis was performed with analysis of variance.

Results: Biventricular pacing increased cardiac output by 4%, 13%, and 44% over RV pacing, LV pacing, and pre-bypass values, respectively ($p < 0.05$) (Figure 1, Table 1). The fractional area of change increased significantly with BV pacing compared to pre-CPB and RV and LV pacing (41% to 49%, $P < 0.05$) (Figure 1, Table 1). A strong tendency for improved diastolic function during biventricular pacing was suggested by an increased propagation velocity of 49 cm/s compared to 38 cm/s and 40 cm/s for RV and LV pacing, respectively ($p = 0.057$).

Conclusions: Biventricular pacing, immediately after cardiopulmonary bypass, improves LV systolic function and cardiac output while showing a strong tendency for improved diastolic function in patients with poor ejection fraction.

Table 1:

	Pre-CPB	Pacing RA-RV	Pacing RA-LV	Pacing RA BV
Heart Rate (beats/min)	74 ±14	94 ±4	94 ±4	94 ±4
Fractional area of Change (%)	40 ±11	36 ±14	35 ±13	44 ±12
Cardiac Output (l/min)	4.4 ±1.2	6.0 ±2.3	5.5 ±1.7	6.2 ±2.2
Mean Arterial Pressure (mmHg)	76 ±11	64 ±8	63 ±8	61 ±7
Central Venous Pressure (mmHg)	10 ±6	8 ±2	8 ±3	8 ±3



NOTES

1:45 p.m. – 2:00 p.m.

13. The Impact of the Extent of Septal Myocardial Infarction on Outcomes Following Surgical Ventricular Restoration

N. D. Patel; J. A. Williams; *J. V. Conte

Johns Hopkins Medical Institutions, Baltimore, Maryland

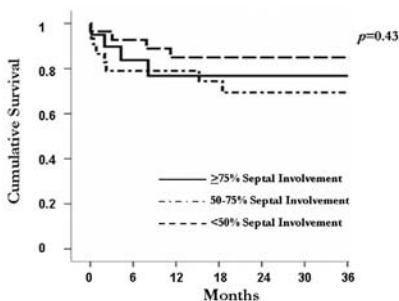
Financial Disclosure: N.D. Patel, 2005 Chase Medical Scholar for Surgical Ventricular Restoration, Other Research Support (receipt of drugs, supplies, equipment or other in-kind support); J.V. Conte, Chase Medical Corporation, Consultant/Advisory Board.

Background: Surgical ventricular restoration (SVR) is classically performed in heart failure patients with anteroseptal infarction. It is unknown how the extent of septal infarction (SMI) affects prognosis. We reviewed our experience to evaluate the impact of the extent of SMI on outcomes following SVR.

Methods: We retrospectively reviewed SVR patients from 1/2002-12/2005. The extent of SMI was assessed by magnetic resonance imaging (MRI) and intraoperative findings; SMI was graded as <50%, 50-75%, and >75% of the length of the septum. Follow-up was 100%.

Results: Seventy-eight patients underwent SVR. Twenty-eight patients had <50%, thirty patients had 50-75%, and twenty patients had >75% involvement of the septum. Patients with >75% involvement had a significantly lower ejection fraction and larger left ventricular volumes preoperatively by MRI (Table 1). All patients with >75% involvement were New York Heart Association (NYHA) class III/IV preoperatively, and 50% (10/20) had significant mitral regurgitation requiring a concomitant mitral valve procedure. Operative mortality was 5% (1/20). Cardiac function improved and was similar between the 3 groups postoperatively (Table 1). Three-year Kaplan-Meier survival was also similar between groups (Figure 1); >75% involvement was not a predictor of mortality on Cox regression analysis (OR=1.4; 95% CI=0.3-7.0; p=0.6). Three-quarters (15/20) of patients with >75% involvement of the septum improved to NYHA class I/II at follow-up.

Conclusions: This study is the first to evaluate the impact of the extent of SMI on SVR outcomes. These data demonstrate similar survival and significant functional and clinical improvement following SVR regardless of the extent of SMI.



	Preoperative	Postoperative	p-value
> 75%			
EF (%)	20.9 + 8.3	39.7 + 6.2	<0.0001
LVESVI (mL/m ²)	124.1 + 67.5	56.1 + 11.3	0.007
LVEDVI (mL/m ²)	163.7 + 66.5	96.2 + 21.2	0.0077
50-75%			
EF	27.5 + 9.0a	38.3 + 10.5c	0.004
LVESVI (mL/m ²)	88.4 + 32.6a	55.6 + 18.4c	0.0041
LVEDVI (mL/m ²)	127.4 + 37.1a	88.8 + 23.8c	0.0036
< 50%			
EF	29.7 + 13.5a	36.1 + 10.9c	0.11
LVESVI (mL/m ²)	87.4 + 45.7 b	64.4 + 30.9c	0.07
LVEDVI (mL/m ²)	119.1 + 47.4a	96.8 + 36.4c	0.11

a p<0.05; versus preoperative, > 75% group

b p=0.06; versus preoperative, > 75% group

c p>0.05; versus postoperative, > 75% group

EF, ejection fraction; LVESVI, left ventricular end-systolic volume index;

LVEDVI, left ventricular end-diastolic volume index

NOTES

2:00 p.m. – 2:15 p.m.

14. Not the Absolute Value But the Change of LVEF and Pulmonary Wedge Pressure During Pump Off Test Can Predict the Successful Explant of LVAS

G. Matsumiya; M. Nishimura; H. Matsue; N. Sekiya; Y. Sawa

Osaka University Graduate School of Medicine, Osaka, Japan

Background: There are remaining questions in clinical application of bridge to recovery using left ventricular assist system (LVAS). Because of severe shortage of organ donors, we have adopted more liberal criteria for LVAS explant and evaluated the factors to predict its success.

Methods: Since 2000 to the end of 2005, 45 patients received LVAS, and 12 of them underwent LVAS explant after the pump off evaluation of left ventricular function. The etiologies of heart failure were idiopathic dilated cardiomyopathy (DCM) in 9, ischemic CM in 2 and peripertum CM in 1. Age ranged between 15 and 38 (27.9 ± 7.6).

Results: Four patients had early recurrence of severe congestive heart failure and required re-LVAS implant (F-group). In these 4 failed patients, increase of pulmonary capillary wedge pressure (PCWP) and decrease of LVEF were observed when the pump was temporally turned off. Eight patients (7 DCM, 1 ICM) have undergone successful LVAS explant and survived for 50-1460 (mean 910) days. In 4 of these successfully recovered patients, LVEF was over 50% during pump off test (S-1). In the other 4 patients, LVEF was less than 40% and not different from that in F-group, but significant increase of PCWP or decrease of LVEF were not observed (S-2).

Conclusions: Not the absolute value of LVEF and PCWP, but those changes from the pump on to off situation may reflect the reserved LV function and could be useful predictors of the successful explant of LVAS and the sustained functional recovery.

Change of LVEF and PCWP during Pump off test

Group	LVEF			PCWP		
	LVAS on	LVAS off	Change	LVAS on	LVAS off	Change
S-1 (n=4)	48±3.8	54.7±2.7	6.7±3.5	4.7±4.9	5.0±6.0	0.2±1.2
S-2 (n=4)	32.6±6.4	35.4±3.1	2.7±5.5	7.0±3.9	7.7±4.3	0.7±2.2
F (n=4)	39.9±9.7	30.5±4.9*	-9.5±5.1**	10.2±11.8	16.7±12.2	6.5 ±2.0**
	*p<0.05 vs. S-1			**p<0.05 vs. S-1, S-2		

NOTES

MONDAY AFTERNOON

2:15 p.m. – 2:30 p.m.

15. Minimalized Cardiopulmonary Bypass Combined to an Optoelectrical Suction Device: The Future of Cardiopulmonary Bypass Technology

*F. F. Immer; E. Gygax; H. Tevaearai; H. Jenni; *T. P. Carrel*

Department of Cardiovascular Surgery, Bern, Switzerland

Background: Minimalized extracorporeal circulation (MECC) is a promising perfusion technology which allows a constant volume perfusion. We developed a MECC-System with a new opto-electrical suction device (Smart), where the suction is activated only when the top of the sucker is in direct contact with blood. A summary of our clinical experience with 805 MECC-Smart perfusions is reported here.

Methods: All in-hospital data of patients who underwent isolated CABG-surgery with the MECC-Smart system were prospectively analysed. Mortality and morbidity were assessed and compared to those obtained in 812 patients who underwent CABG-surgery with a conventional cardiopulmonary bypass system (CPB).

Results: Patients characteristics were similar in both groups. Average number of distal anastomoses was 3.2 ± 0.9 , without difference between the two techniques. Intraoperative vasoactive support (>500 mcg Noradrenalin/h) was more frequently required in patients who underwent surgery with CPB (21%), than in those with MECC-Smart (0%) ($p < 0.05$). Perioperative transfusion of red blood cells was significantly lower in the MECC-Smart group (0.058 Units/pt compared to 1.46 Units/pt; $p < 0.05$). Postoperative maximal cTnl-values were significantly lower in the MECC-Smart-group (11.8 ± 11.6 versus 24.2 ± 26.0 ug/l; $p < 0.05$). Atrial fibrillation before discharge occurred in 11% of the MECC patients and in 39% of the CPB-patients ($p < 0.05$).

Conclusions: Results of CABG-surgery using MECC-Smart technique are excellent. Perfusion with constant volume is safe, reduces transfusion requirements and perioperative myocardial damage seems to be lower than after conventional CPB.

NOTES

MONDAY AFTERNOON

2:30 p.m. – 2:45 p.m.

16. Partial Loading of the Left Ventricle During Mechanical Assist Device Support is Associated With Improved Metabolism of Neuroendocrine Hormones and Increased Exercise Capacity

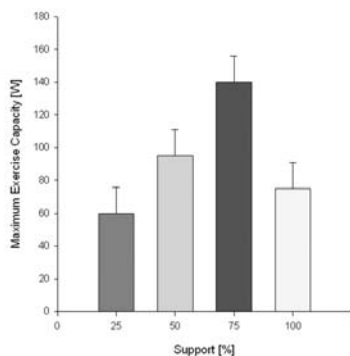
H. Welp; C. Etz; S. Klotz; A. Hoffmeier; A. Rukosujew; *H. H. Scheld; *C. Schmid
Department of Thoracic and Cardiovascular Surgery, University Hospital Münster, Münster, Germany

Background: Myocardial recovery has been observed after placement of left-ventricular-assist-devices (LVAD). However, the optimal degree of left ventricular unloading during LVAD support is unknown.

Methods: Sixteen patients with an LVAD underwent cardiopulmonary exercise-testing employing spirometry. Every week, level of support (measured as LVAD output) was reduced by 25 % and exercise-testing repeated. Left ventricular unloading was assessed by echocardiographic measurement of LVEDD. Blood samples for epinephrine, norepinephrine, renin and vasopressin were taken before and immediately after the exercise test.

Results: Reduction of ventricular support to 75%, 50% and 25% lead to an significant increase in LVEDD compared to baseline. The increment of support from 50% to 75% lead to an increase in peak-oxygen-consumption and maximum exercise-capacity (Fig. 1.). Exercise lead to a significant increase of norepinephrine and epinephrine levels at each level of support. Norepinephrine and epinephrine levels were not significantly different at the four levels of support before and after exercise. Renin-activity at rest was significantly higher at 25%, 50% and 100% of support than it was at 75%. After exercise, renin-activity was significantly higher as being at rest in all groups. However, the difference was significantly lower when support was at 75% as compared to 25%, 50% and 100%.

Conclusions: These results suggest that partial loading of the left ventricle does not result in a linear neuroendocrine response and exercise-capacity. There is a physiologic optimum during which the left ventricular assist device support is most beneficial, also indicating that partial unloading is superior to complete unloading.



NOTES

MONDAY AFTERNOON

2:45 p.m. – 3:00 p.m.

17. Preoperative Screening Scale Predicts Successful Bridge to Transplantation Among Chronic Congestive Heart Failure Patients

M. J. Russo; *J. M. Chen; H. Hussey; *M. Argenziano; D. C. Ascheim; D. M. Mancini; *A. S. Stewart; *M. C. Oz; *Y. Naka

Columbia-Presbyterian Medical Center, New York, New York

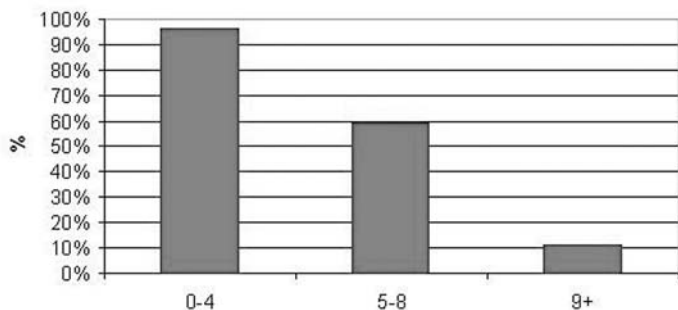
Background: Devise a preoperative risk score to predict successful bridge to transplant (BTT) following left ventricular assist device (LVAD) implantation among patients with chronic congestive heart failure (CCHF).

Methods: Analysis included 132 CCHF patients (diagnosis ≥ 6 months) who underwent LVAD implant as a BTT. The outcome measure was survival to transplantation; others included 1-year survival. Univariate and multivariable analyses were performed to determine the predictors of survival to transplant after LVAD insertion. Using the relative risks for each identified variable, a risk factor summation score was devised. To assess the predictive power of the model, ROC curves were constructed to determine the area under the curve (AUC).

Results: Patient risk was determined by assigning points based on the following scoring scheme: albumin < 2.9 (1), hematocrit < 27 (1), central venous pressure > 16 (1), age 56 years old (1), CrCl < 55.2 (2), female sex (2), previous cardiac surgery (2), PT > 16 (2), and BMI ≤ 20.4 (3) Survival to transplant by risk score is as follows: 0-4 96.2% (n=79); 5-8 59.1% (n=44); ≥ 9 11.1% (n=9); the AUC was 0.87 (0.81-0.94). This risk score is highly predictive of longer term survival with 1-year survival following LVAD implant by risk score as follows: 0-4 86.0% (n=57); 5-8 46.0% (n=37); ≥ 9 11.1% (n=9); the AUC was 0.80 (0.71-0.88)

Conclusions: Pre-VAD implant patient characteristics are highly associated with survival to transplant and longer term survival. Because CCHF patients may undergo non-emergent VAD implant, this risk score could assist in patient selection, timing of implant, and pre-implant optimization of patients.

**% Survival to Transplant Following VAD Insertion
among Chronic Congestive Heart Failure Patients,
by Pre-Implant Risk Score**



NOTES

MONDAY AFTERNOON

3:00 p.m. – 3:15 p.m.

18. Effect of a Polymorphonuclear Elastase Inhibitor on Acute Lung Injury After Cardiopulmonary Bypass: Evaluation with Bronchoscopic Microsampling

M. Fujii¹; Y. Miyagi¹; K. Hinokiyama¹; *Y. Ishii¹; R. Bessho¹; *T. Nitta¹; M. Ochi¹; K. Shimizu²
¹Cardiovascular Surgery, Nippon Medical School, Tokyo, Japan; ²Surgery, Nippon Medical School, Tokyo, Japan

Background: Cardiopulmonary bypass (CPB) has been implicated as a cause of acute lung injury (ALI) in cardiac surgical patients. We examined pulmonary biochemical constituents (PBC) in epithelial lining fluid with bronchoscopic microsampling (BMS) probe and evaluated the effect of sivelestat sodium (SI), a novel synthesized polymorphonuclear (PMN) elastase inhibitor, on acute lung injury (ALI) caused by cardiopulmonary bypass.

Methods: Twelve patients who underwent aortic valve surgery using CPB, followed by the development of both systemic inflammatory response syndrome (SIRS) and ALI, were treated with either 0.2 mg/kg per hour SI (SI group, n = 6) or 0.9 % saline (control group, n = 6) from the start of surgery. Samples of PBC were collected after bronchial intubation, during CPB, and 3 hours after CPB termination with BMS probe. Pulmonary data were obtained perioperatively.

Results: There were no differences in the baseline characteristics. Concentrations of PMN elastase in the SI group were significantly suppressed compared with those in the control group (SI group 4-5-9 pg/mg, control group 6-32-54 ng/mg, respectively; $p=0.027$). Also the SI group had a lower level of interleukin (IL)-6 and IL-8. Alveolar-arterial oxygen difference ($AaDO_2$) sharply increased and PaO_2/FiO_2 ratio showed severe worsening after CPB. The pattern of physiological deterioration of gas exchange, however, was improved 12 hours after CPB in the SI group.

Conclusions: Sivelestat sodium suppressed the production of PMN elastase and attenuated the elevation of IL-6 and IL-8 in the PBC, resulting in improved respiratory function in patients with ALI caused by CPB.

NOTES

MONDAY AFTERNOON

3:15 p.m. – 3:30 p.m.

19. Prolonged Intraoperative Forebrain Desaturation Predicts Cognitive Decline After Cardiac Surgery

*J. P. Slater; J. Stack; K. Vinod; T. Guarino; R. T. Bustami; *J. M. Brown, III; A. L. Rodriguez; *C. J. Magovern; T. S. Zauber; G. V. S. Parr; K. Freundlich*
Atlantic Health System, Morristown, New Jersey

Background: Previous studies have reported an 11-75% incidence of postoperative cognitive decline among cardiac surgery patients. INVOS® Cerebral Oximeter is an FDA-approved non-invasive device that measures regional cerebral oxygen (rSO₂) desaturation. The purpose of this study is to examine whether decreased rSO₂ predicts cognitive decline following coronary artery bypass grafting (CABG).

Methods: Prospectively collected data were obtained from a randomized clinical trial comparing outcomes in CABG patients who underwent blinded and unblinded intraoperative cerebral oximetry monitoring. Cognitive function was assessed pre and postoperatively in 240 patients using standardized neurocognitive tests. Cognitive decline was defined as a decrease of one standard deviation or more in performance on at least one neurocognitive measure. The rSO₂ desaturation risk score was calculated by multiplying rSO₂ below 50% by time in seconds. A multivariate logistic regression model (table) was used to examine the independent effect of decreased intraoperative rSO₂ on cognitive decline. The model was adjusted for age, gender, race, hypertension, left ventricular ejection fraction, history of myocardial infarction, renal function, and intraoperative neuromonitoring.

Results: CABG patients with rSO₂ desaturation risk score of greater than 6000 had a significantly higher risk of cognitive decline [Odds Ratio (OR) = 2.69, p = 0.003]. Cognitive decline was also significantly associated with smoking history and increased score on the Delirium Rating Scale.

Conclusions: This study showed that prolonged intraoperative forebrain desaturation is significantly associated with an increased risk of cognitive decline after CABG. Intraoperative management of cerebral rSO₂ may result in decreased cognitive decline after CABG.

Factor (N = 240)	Mean or %	OR for Cognitive Decline	95% CI	p-value
rSO ₂ desaturation risk > 6000 (yes vs. no)	37.5%	2.69	(1.40,5.17)	0.003
History of Smoking (yes vs. no)	67.9%	1.96	(1.05,3.66)	0.034
Delirium Rating Scale (per 1 unit increase)	5.0	1.29	(1.10,1.53)	0.002

NOTES

MONDAY AFTERNOON

PARALLEL SURGICAL FORUM III: GENERAL THORACIC

Monday, January 29, 2007, 1:30 p.m. - 3:30 p.m.

Unless otherwise noted in this program book or verbally by the speakers, speakers have no relevant financial relationships to disclose and will only be presenting information on devices, products, or drugs that are FDA approved for the purposes they are discussing.

1:30 p.m. – 1:45 p.m.

20. Extrapulmonary Ventilation for Refractory Acute Respiratory Distress Syndrome After Pulmonary Resection

*P. Macchiarini; P. Jungebluth; M. Iglesias; J. Badia; A. Torres; J. M. Gimferrer; C. Petit
Department of General Thoracic Surgery, Hospital Clinic Barcelona, University of Barcelona, Barcelona, Spain

Financial Disclosure: P. Macchiarini, Principal Investigator, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Consultant, Consultant/Advisory Board

Background: Evaluate the feasibility and efficacy of a pumpless, artificial extracorporeal respiratory support (iLA, Novalung®) in patients with post-resectional acute respiratory distress syndrome (ARDS) refractory to conventional medical treatment.

Methods: Patients with post-resectional ARDS (PaO₂/FIO₂ ratio <200 mm Hg; bilateral or unilateral pulmonary infiltrates on chest x-ray, absence of clinical signs of left atrial hypertension) that failed to respond to conventional treatment including protective mechanical ventilation, prone positioning, steroids, control secretions, and nitric oxide were included. Other forms of ARDS, e.g. sepsis, heart failure, aspiration, or bronchial fistula were excluded. iLA was attached via the femoral vessels by direct transcutaneous cannulation.

Results: Since 2005, 7 patients (5 pneumonectomies and 2 lobectomies) with a refractory and worsening ARDS lasting 4±2 days had an iLA support for 11±6 days (range, 4 to 23 days). This permitted a near static ventilation (tidal volume, 3±0.5 mL/Kg; respiratory rate, 6±2 breaths/min; PEEP of 12±3 cmH₂O, and FiO₂ of 0.5±0.1), an arterio-venous CO₂ removal of 255±31 mL/min, and an early significant clinical, radiological and gas exchange improvement:

Parameters	Prior iLA	12 hrs iLA	48 hrs iLA
PaCO ₂ (mmHg)	67±7	45±2*	38±3*
PaO ₂ /FiO ₂	94±28	183±31*	223±42*
SaO ₂ (%)	95±1	98±1*	98±1*

*p <0.05

All patients could be weaned from mechanical ventilation 8±3 days after disconnecting the iLA support. All but one (14%) patient survived.

Conclusions: The artificial respiratory support used here was highly effective in patients with refractory ARDS following pulmonary resection.

NOTES

MONDAY AFTERNOON

1:45 p.m. – 2:00 p.m.

21. Survival Following Lung Transplant is Equivalent Regardless of CMV-Matching Status: An Analysis of the UNOS Database

M. J. Russo; D. I. Sternberg; K. N. Hong; T. P. Martens; R. A. Sorabella; F. D'Ovidio; J. S. Wilt; S. M. Kawut; S. Arcasoy; *J. R. Sonett
Columbia-Presbyterian Medical Center, New York, New York

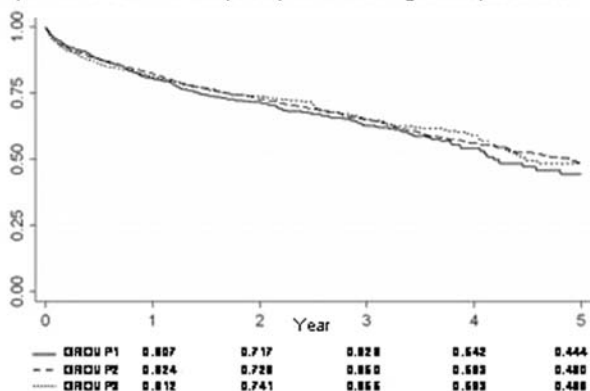
Background: To assess (1) the relationship between donor-recipient CMV serologic status and post-transplant survival in the current era and (2) temporal changes in post-transplant survival by CMV matching status over 3 sequential time periods.

Methods: De-identified data was obtained from UNOS. To examine trends, all lung transplants occurring between 1/1/91 and 12/31/04 were considered in recipients 18 years. Based on pre-transplant CMV serologies (+/-) of recipients (R) and donors (D), three groups were compared: GROUP1 (D+|R-), GROUP2 (D-|R+ and D+|R+), and GROUP3 (D-|R-). Primary analysis focused on transplants performed 1/1/00-12/31/04. To assess temporal trends in survival, patients were divided into 3 time periods based on transplant year: 1991-1994, 1995-1999, and 2000-2004

Results: During the current era (2000-2004), GROUP1 (n=951), GROUP2 (n=2,676), and GROUP3 (n=772) exhibited no differences in median survival (p=0.561): 1,527, 1,793, and 1,636 days, respectively. Over the 3 time periods, median survival improved significantly in GROUP1 (p < 0.0001) and GROUP2 (p < 0.0001), but there were no differences over time in GROUP3 (p=0.642). GROUP1 had significantly worse median survival compared with GROUP2 and GROUP3 in 1991-1994 (p=0.004) and 1995-1999 (p < 0.0001), but there was no difference in 2000-2004 (p=0.561).

Conclusions: In earlier eras, CMV mismatch was associated with worse survival. However, in the current era there is no difference in post-transplant survival between groups. Equality resulted from improvements in survival among CMV mismatched recipients, possibly due to more aggressive CMV prophylaxis. Therefore, a D+|R- CMV-mismatch should not be sufficient to decline a lung allograft offer.

Kaplan Meier Survival Analysis by CMV Matching Status, 2000-2004



NOTES

MONDAY AFTERNOON

2:00 p.m. – 2:15 p.m.

22. Anatomic Lung Resection for Environmental Mycobacterial Disease

**J. D. Mitchell; A. Bishop; A. Cafaro; M. J. Weyant; *M. Pomerantz*
University of Colorado, Denver, Colorado

Background: Chronic lung infections involving environmental mycobacteria (EM) are often inadequately treated due to the presence of concomitant lung parenchymal damage, leading to persistence of the offending organism(s). Little is known about the results of surgical therapy as part of a multi-modality approach to these infections.

Methods: A retrospective review of 215 consecutive patients who underwent anatomic lung resection for EM disease at our institution as part of a multi-modality treatment program.

Results: 215 patients underwent 238 operations. The average age was 54 years, range 23-77. 39 patients had prior ipsilateral thoracic procedures. All patients had in-vitro sensitivity testing of cultured organisms and had several months of guided antibiotic therapy. Special emphasis was placed on preoperative nutritional status. 72% of patients had Mycobacterium Avium Complex disease. Anatomic lung resection was performed in all patients, with 111 lobectomies, 45 segmentectomies, 42 pneumonectomies, and 40 mixed procedures. 67 patients had either muscle or omental transposition. Mortality rate was 3.6%. The major morbidity rate was 14.2%. Average length of stay was 8 days. Presence of postoperative bronchopleural fistula was associated with positive sputum at operation and completion pneumonectomy.

Conclusions: This series represents the largest cohort of patients in the literature to date who underwent operation for EM infection. Surgery for EM disease may be accomplished with minimal morbidity and mortality. Careful attention to factors such as preoperative sensitivity testing, nutrition, and complete anatomic resection are keys to success.

NOTES

MONDAY AFTERNOON

2:15 p.m. – 2:30 p.m.

23. Outcomes in Survivors from Readmission to the Intensive Care Unit Following Initial Recovery From Major Thoracic Oncologic Surgery

S. Song¹; *J. Zo²; M. Kim²; J. Lee²; H. Lee²

¹Division of Cardiovascular Surgery, Cardiovascular Center, Yonsei University College of Medicine, Seoul, Republic of Korea; ²Center for Lung Cancer, Research Institute and Hospital, National Cancer Center, Gyeonggi, Republic of Korea

Background: The information of the survivors from the life-threatening complications after thoracic surgery has been limited. The purposes of this study are to identify the risk factors that can predict the mortality of patients with intensive care unit (ICU) readmission after initial recovery from thoracic oncologic surgery and assess the outcomes in survivors.

Methods: From March 2001 to August 2005, 1087 patients underwent major resection for lung and esophageal cancer. The study involved a retrospective review of 94 patients (8.6%) who required salvage intensive care after initial recovery. The patient group included 85 males (90.4%), and mean age was 66 years old. Patients were classified as survivors (n=63, 67%) and non-survivors (n=31, 33%).

Results: The major reason for ICU readmission was pulmonary complication (n=73, 77.7%); 64 patients (68.1%) required mechanical ventilation and 42 (43.3%) renal support. Multivariate analysis showed that initial APACHE III score at readmission to ICU, duration of mechanical ventilation, and renal support were significant predictors for hospital mortality.

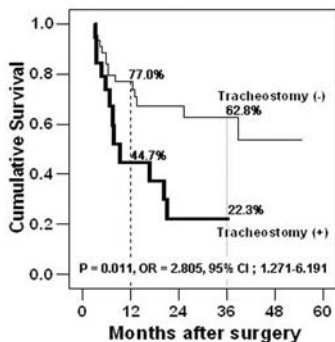
Multivariate Logistic Regression Analysis of In-Hospital Mortality Risk Factors

Variables	Category	No. of Patients	No. (%) of Non-survivors	Odds Ratio	95% Confidence Interval	p Value
APACHE III score	≥ 50	52	28 (53.8)	12.1000	2.859-51.206	0.001
	< 50	42	3 (7.1)	1		
Duration of ventilation (days)	≥ 5	39	24 (61.5)	7.859	2.375-26.006	0.001
	< 5	55	7 (12.7)	1		
Renal support	Yes	42	23 (54.8)	3.611	1.096-11.895	0.035
	No	52	8 (15.4)	1		

Overall 3-year survival was 50.6%. Cox analysis showed that survivors with tracheostomy had a poor prognosis (p=0.011). Of the twelve late mortalities with tracheostomy, nine patients (75%) died of cancer-unrelated causes (p=0.0016).

Conclusions: ICU readmission after thoracic oncologic surgery is significantly associated with high in-hospital mortality. Identification of patients with high APACHE score and prolonged ventilation at readmission may help to predict the risk in mortality. Preemptive strategies designed to optimize the high-risk patients may improve outcomes. Survivors from ICU readmission after thoracic oncologic surgery require meticulous and frequent follow-up because they are persistently exposed to the deteriorative risk after discharge.

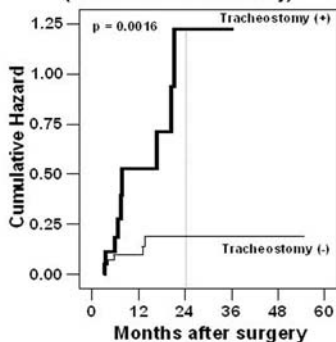
A. Overall Survivals
(with/ without Tracheostomy)



No. at risk

Tracheostomy (-)	44	34	31	30	29
Tracheostomy (+)	19	10	7	7	

B. Cumulative Mortalities from Cancer-unrelated Causes
(with/ without Tracheostomy)



No. at risk

Tracheostomy (-)	44	40	38	38	38
Tracheostomy (+)	19	13	10	10	

NOTES

2:30 p.m. – 2:45 p.m.

24. Role of CT-PET in the Evaluation of Screening Detected Lung Nodules

G. Veronesi¹; G. Paganelli¹; M. Bellomi²; G. Pelosi²; P. Solli¹; *F. Leo¹; G. Trifirò¹; L. Preda¹; *L. Spaggiari²

¹European Institute of Oncology, Milan, Italy; ²European Institute of Oncology, University of Medicine, Milan, Milan, Italy

Background: Low dose CT of the chest is a promising tool for lung cancer screening but may be limited by the difficulty of non invasive differential diagnosis of frequently found non calcified lung nodules. We evaluated the sensitivity of PET scan to diagnose screening detected lung cancers.

Methods: Between October 2004 and October 2005, 5202 asymptomatic current or former smokers, older than 50 years, were enrolled in a single-institution screening trial using annual low-dose multidetector CT for 5 years. Of these, 157 patients presented one or more non calcified lung nodules larger than 8 mm at baseline CT and underwent a CT-PET. Lung nodules were classified in solids, partially solids or non solids. Pet was considered positive when the standardised uptake value (SUV) was higher than 2.

Results: 55 primary lung cancers were diagnosed and 7 patients underwent surgical biopsy for benign disease. Median and mean size of lung cancers were 14 and 18 mm respectively. Overall sensitivity of PET to diagnose a lung cancer in a screening setting was 91% (50/55). It reached 100% (40/40) in case of solid or partially solid nodules larger than 1 cm. On the contrary sensitivity was only 25% (1/4) in case of non solid nodules (ground glass opacities).

Conclusions: CT-PET presents a high sensitivity to diagnose screening detected lung cancers and seems useful to avoid extensive use of invasive diagnostic procedures in undetermined lung nodules. Longer follow up is needed to confirm these results.

NOTES

MONDAY AFTERNOON

2:45 p.m. – 3:00 p.m.

25. Comparison of Open and Thoracoscopic Pulmonary Segmentectomy: Reduced Length of Stay After Minimally-Invasive Technique

B. Atkins; G. D. Lappas; *D. H. Harpole, Jr.; E. M. Toloza; T.A. D'Amico; *W. R. Burfeind, Jr.
 Duke University School of Medicine, Durham, North Carolina

Background: Thoracoscopic lobectomy is a safe and effective alternative to open lobectomy. However, few data exist regarding thoracoscopic approaches to lung-sparing, anatomic resection (segmentectomy). This study compares thoracoscopic segmentectomy (TS) with open segmentectomy (OS).

Methods: This is a retrospective review of a prospectively collected database of 77 consecutive segmentectomies performed between 2000 and 2006. Preoperative, intraoperative, and postoperative variables for those undergoing TS (n=48) were compared with those undergoing OS (n=29). Student's t-tests were used for continuous variables and Fisher's exact tests for binomial variables.

Results: The indications for pulmonary resection included non-small cell lung cancer (n=39), metastatic disease (n=30), and other (n=8). All common segmentectomies were represented. No thoracoscopic cases were converted to open. Baseline characteristics were similar between groups. Table 1 summarizes the intraoperative and postoperative variables. Outcomes were similar except that the TS group went home 2.5 days sooner than the OS group. Two deaths occurred in the OS group (6.9%) while no deaths occurred in the TS group.

Conclusions: Thoracoscopic segmentectomy is both safe and feasible. For experienced thoracoscopic surgeons, TS appears to be a sound option for lung-sparing, anatomic pulmonary resections.

Table 1. Intraoperative and Postoperative Variables

	TS	OS	p-value
Op Time (minutes)	137+/- 45	130 +/- 65	0.6
EBL (mL)	250 +/- 200	283 +/-200	0.5
Nodal Stations Sampled	4.1 +/- 3	3.9 +/-3	0.8
Chest Tube Duration (days)	3.4 +/- 4	3.6 +/- 1	0.7
LOS (days)	4.3 +/- 3	6.8 +/- 6	0.01
Any Complications	15/48 (31%)	10/29 (34%)	ns

NOTES

MONDAY AFTERNOON

3:00 p.m. – 3:15 p.m.

26. PET Scanning Predicts Response and Survival Following Induction Chemotherapy for Esophageal Carcinoma

*J. L. Port; *R. K. Korst; *P. C. Lee; A. L. Kansler; Y. Kerem; P. Christos; *N. K. Altorki
Weill Cornell Medical College, New York, New York

Background: The ability to predict response following preoperative chemotherapy may have an impact on treatment strategy. Many reports have focused on PET scanning in conjunction with induction chemoradiotherapy. This study evaluates the accuracy of PET scanning with induction chemotherapy alone.

Methods: Patients who underwent both a pre-and-post induction chemotherapy PET scan prior to surgical resection for esophageal carcinoma were included (1999-2005). The percent reduction in max SUV after therapy was determined and ROC analysis was performed. Sensitivity, specificity, predictive values, and area under the ROC curve (AUC) are reported. Kaplan-Meier survival analysis was performed.

Results: 62 patients (52 men, median age 62.3) with a median follow-up of 17.3 months were evaluated. Thirty-nine patients (62.9%) had a partial (n=32) or complete response (n=7) to induction therapy. Thirty-seven patients (59.7%) had a >50% reduction in the max SUV of their primary tumor and had a significant improvement in DFS compared to patients with a <50% reduction in max SUV (35.5 vs. 17.9 months, p=0.03). PET sensitivity and specificity for predicting either a partial or complete response was 73.7% and 60.9%, respectively. The positive and negative predictive value for PET was 75.7% and 58.3%, respectively. AUC was 70.5% (95% CI=57.4%, 83.6%). Of significance, 11 patients had a 100% reduction in max SUV despite the presence of residual tumor.

Conclusions: Utilizing a 50% reduction of the max SUV following induction therapy, PET can help predict response to therapy and improved survival. However, a complete reduction in PET signal cannot be equated with a complete response.

NOTES

MONDAY AFTERNOON

3:15 p.m. – 3:30 p.m.

27. Roux-en-Y Gastric Bypass for Intractable Gastroesophageal Reflux Following Anti-Reflux Surgery

O. Awais; J. Tam; K. Irshad; *J. Luketich
UPMC, Pittsburgh, Pennsylvania

Background: Intractable gastroesophageal reflux disease (GERD) after reflux operation can be debilitating and present a difficult challenge. The role of Roux-en-Y gastric bypass (RYGBP) in management of GERD is investigated.

Methods: Between June 2000 and October 2005, 25 patients with GERD following reflux surgery underwent RYGBP. Prior fundoplication was taken down and recurrent hiatal hernia was reduced before RYGBP. Clinical visits and telephone interviews were used to document subjective satisfaction and GERD improvement using GERD-Health Related Quality of Life (HRQL) scale.

Results: There were 4 males and 21 females with mean age of 51 years (range 35-74). 72% had Body Mass Index (BMI) >30. 44% had more than one reflux surgery. 40% had previous Collis gastroplasty. 60% underwent laparoscopic RYGBP and 40% underwent open RYGBP. Mean operative time was 386 minutes and median length of stay was 6 days. 6 patients (24%) developed major postoperative complication including anastomotic leak (N=2), Roux-limb intussusceptions (N=1), myocardial infarction (N=1), pneumonia, pulmonary embolism, and anoxic encephalopathy. Mortality rate is 0%. 80% reported satisfaction at mean follow-up time 495 days. BMI reduced from 35.8 to 27.7 ($p < 0.001$). 35% of co-morbid conditions resolved. GERD-HRQL score improved from 29.9 to 7.3 ($p < 0.001$).

Conclusions: RYGBP for persistent GERD after reflux surgery is technically challenging with high morbidity. Majority of patients reported satisfaction to surgical outcome with significant improvement in GERD symptoms. Many patients had associated benefits of weight loss and improvement of co-morbid conditions. RYGBP is an effective surgical modality for treatment of intractable GERD following reflux surgery.

NOTES

MONDAY AFTERNOON

PARALLEL SURGICAL FORUM IV: CONGENITAL

Monday, January 29, 2007, 1:30 p.m. – 3:30 p.m.

Unless otherwise noted in this program book or verbally by the speakers, speakers have no relevant financial relationships to disclose and will only be presenting information on devices, products, or drugs that are FDA approved for the purposes they are discussing.

1:30 p.m. – 1:45 p.m.

28. Prevalence and Associated Risk Factors for Intervention in 313 Children with Subaortic Stenosis

T. Karamlou; R. Gurofsky; A. Bojceviski; J. L. Russell; *G. S. Van Arsdell; *W. G. Williams;
B. W. McCrindle
Hospital for Sick Children, Toronto, Ontario, Canada

Background: We sought to determine prevalence of intervention and associated risk-factors in children with subaortic stenosis (SubAS). Our secondary objective was to investigate whether a protocol of early subaortic resection at a preoperative mean systolic gradient (MGr) across the left ventricular outflow tract > 30 mmHg was supported by recent outcome data.

Methods: Record review of all children (N=313) diagnosed with SubAS between 1971-1998 at our institution. Multivariable Cox proportional hazard models determined the prevalence and associated risk-factors for initial subaortic resection. Mixed linear regression analysis of serially obtained echo (N=933) established trends in MGr over time and identified those factors associated with more rapid LV gradient progression.

Results: Median age at presentation was 8 months. Risk-unadjusted freedom from initial subaortic resection were 73% at one year and 38% at 16 years following admission, with 159 (51%) patients undergoing at least one intervention. Subaortic resection was associated with patient demographic and anatomic characteristics at presentation, including higher initial MGr ($P<0.001$), larger aortic annulus z-score ($P=0.005$), longer LV ejection time ($P<0.001$), and smaller body surface area ($P<0.001$) and smaller mitral annulus z-score ($P=0.003$). Initial resection was also associated with a faster rate of MGr progression ($P=0.003$). MGr progressed nonlinearly in all patients over time (P 30 mmHg ($P<0.001$), initial aortic valve thickening ($P=0.003$), and attachment of SubAS to the mitral valve ($P=0.003$).

Conclusions: Subaortic resection before the development of a MGr > 30 mmHg will reduce the rate of MGr progression and should, therefore, also reduce recurrence and reoperation of SubAS.

NOTES

MONDAY AFTERNOON

1:45 p.m. – 2:00 p.m.

29. Repair of Neonates and Young Infants with Ebstein's Anomaly and Related Pathology

*C. J. Knott-Craig¹; K. E. Ward¹; E. O. Overholt¹; *J. K. Kirklin²

¹OU Medical Center, Oklahoma City, Oklahoma; ²University of Alabama, Birmingham, Alabama

Background: Severely symptomatic neonates and young infants with Ebstein's anomaly (EA) usually die without surgical intervention. The relative risks and benefits of single ventricle palliation vs a 2-ventricle repair is uncertain. In a recent series, Starnes reported 69% early survival with single ventricle palliation in 16 neonates with EA. Our institutional bias has been to do a 2-ventricle repair in all such patients.

Methods: In order to compare these two approaches, we reviewed our surgical experience with a 2-ventricle repair in the severely symptomatic neonate (n=20) and young infant (n=4) with EA. The indications for operation were ventilator dependence, severe cardiac failure, prostaglandin-dependant circulation, and gross cardiomegaly.

Results: Between 1994 and May 2006, 24 consecutive patients with EA underwent operation. Associated co-morbidity included anatomic or functional pulmonary atresia (n=14); VSD's (n=3), small LV size (n=3), hypoplastic branch pulmonary arteries (n=2), previous cardiac operation (n=3), and significant intra-cranial hemorrhage (n=3). Repair consisted of TV repair (n=21), partial closure of ASD (n=22), reduction atrioplasty (n=21), modified BT shunt (n=2), and repair of all associated defects (n=18). Hospital survival was 75% and there have been no late deaths during a median follow-up period of 4.5 years (range .2-12 yrs). Three patients have needed tricuspid valve replacement during the follow-up period. Late arrhythmia requiring medication is present in one patient. All pts are currently in functional class I.

Conclusions: Two-ventricle repair currently has similar early survival compared to single ventricle palliation. The advantages of a better physiological repair can be anticipated over a longer follow up period.

NOTES

MONDAY AFTERNOON

2:00 p.m. – 2:15 p.m.

30. Retrovirally Labeled Endothelial Progenitor and Mesenchymal Stem Cells Persist in Tissue Engineered Pulmonary Artery Augmentation Patches In Vivo
*B. A. Mettler¹; V. L. Sales¹; C. L. Stucken¹; V. Anttila¹; K. Mendelson²; J. Bischoff¹; *J. E. Mayer, Jr.¹*
¹Children's Hospital Boston, Boston, Massachusetts; ²Brigham and Women's Hospital, Boston, Massachusetts

Background: Reconstruction of the right ventricular outflow tract is a frequently encountered procedure of a congenital heart surgeon. We sought to tissue engineer (TE) pulmonary artery augmentation patches from endothelial progenitor (EPCs) and mesenchymal stem cells (MSCs) and to determine the fate of cells in the TE construct during in vivo maturation by retrovirally labeling implanted cells.

Methods: Autologous ovine EPCs and MSCs were labeled with a retroviral vector encoding green and red fluorescent proteins (GFP and RFP) respectively, coseeded onto polyglycolic acid biopolymers, and cultured for five days in a laminar fluid flow system. The TE patches were implanted into the main pulmonary artery with 1, 2, 4 and 6 week in vivo maturation (n=7). In vivo evaluation included ultrasonography and angiography with pre-implant and post-explant specimens evaluated using histology and immunofluorescence.

Results: No evidence of stenosis was observed with progressive tissue histogenesis correlating with in vivo maturation. Stable retroviral protein expression was demonstrated in 97% GFP+ and RFP+ progenitor cells with cellular phenotype and transgene expression maintained through serial passages in vitro. In vivo GFP+EPCs and RFP+MSCs persisted in the implanted TE patch at all time points; positive cells were detected by immunofluorescence. No EPCs or MSCs were detected in the adjacent native pulmonary artery.

Conclusions: These data demonstrate the successful creation of an autologous, functional, cardiovascular augmentation patch using coseeded progenitor cell sources. GFP and RFP labeling showed that the implanted cells persist in the TE construct and provide an effective method to track multiple cell types after implantation.

NOTES

MONDAY AFTERNOON

2:15 p.m. – 2:30 p.m.

31. Right Ventricular Outflow Tract Reconstruction, What Conduit to Use? Homograft or Contegra®?

*J. T. Christenson¹; J. Sierra¹; N. H. Lahlaidi¹; M. Beghetti²; *A. Kalangos¹

¹Department of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland; ²Department of Pediatric Cardiology, University Hospital of Geneva, Geneva, Switzerland

Background: Both cryopreserved homografts and glutaraldehyde fixed bovine jugular vein grafts (Contegra®) are used as conduits for right ventricular outflow tract reconstructions (RVOT) in children. Both types of conduits have their pros and cons vividly described in the literature, but so far no truly comparative studies have been presented.

Methods: Between 1993 and 2005, 88 homografts (54 blood group compatible, ISO, and 34 non blood group compatible, Non-ISO) and 50 Contegra® conduits were implanted for RVOT reconstruction. Mean age was 4.9 ± 3.6 years, ranging from 1 month to 15 years. The primary diagnosis was Tetralogy of Fallot (52%). Pulmonary artery stenosis or atresia (31%) and truncus arteriosus. There were no demographic differences between the groups. The mean graft diameter was 19mm (homografts) and 15mm (Contegra®).

Results: There were no hospital deaths in the homograft groups, while 2 patients died from graft unrelated causes in the Contegra®-group. Postoperative mean gradient was 15.5 ± 13.2 mmHg (homografts) and 19.8 ± 11.5 mmHg (Contegra®). Moderate valvar regurgitation was seen in 3.4% (homografts) and 8.0% (Contegra®). No supra-valvar lesions were observed in either group.

Conclusions: Blood group compatible cryopreserved homografts and Contegra® conduits for RVOT reconstruction have very similar performance up to 7 years postoperatively and are significantly superior to non blood group compatible homografts.

Table 1. Freedom from graft dysfunction and /or reoperation at 2,5,7 and 10 years (patients at risk)

Type of conduit	2 years	5 years	7 years	10 years
Homograft, all	92.2% (88)	90.8% (65)	81.6% (46)	78.2% (24)
Homograft, ISO	100% (54)	97.4% (38)	93.8% (27)	88.6% (15)
Homograft, non-ISO	79.9% (32)	76.9% (23)	66.6% (15)	55.5% (6)
Contegra®	94.4% (50)	90.7% (17)	90.7% (5)	--

NOTES

MONDAY AFTERNOON

2:30 p.m. – 2:45 p.m.

32. Long-Term Outcomes Following Surgical Treatment of 236 Children With Partial Anomalous Pulmonary Venous Connection

*B. Alsoufi; *W. G. Williams; *C. A. Caldarone; S. Cai; *G. S. Van Arsdell; *J. G. Coles

Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada

Background: We explore early results and long-term morbidity following surgical repair of partial anomalous pulmonary venous connection (PAPVC) at our institution.

Methods: Between 1982-2006, 306 consecutive patients underwent surgery for PAPVC. 236 (77%) were children. Median age was 5.3 years (0.47-18 years). Clinical and echocardiographic follow-up was obtained.

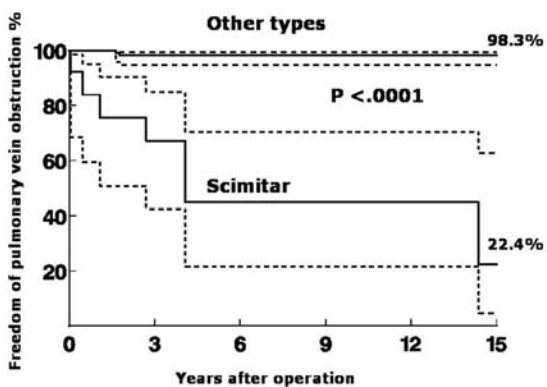
Results: 214 patients (90%) had right-sided, 17 (7%) had left-sided, and 5 (2%) had bilateral PAPVC. Anomalous veins were partial in 186 patients (79%) and involved the entire lung in 50 (21%).

The most common type was right PAPVC into superior vena cava SVC (n=175, 74%), 87% associated with sinus-venosus atrial septal defect; followed by right PAPVC into right-atrium (n=29, 12%), left PAPVC into innominate-vein (n=22, 9%), and Scimitar syndrome (n=15, 6%).

Repair strategy included intra-cardiac baffle (n=203), pulmonary vein re-implantation (n=23), and SVC division with re-implantation into right atrial appendage (n=14). There was no early or late mortality. Freedom from re-operation, caval obstruction, pulmonary-vein obstruction, and pacemaker implantation at 15 years was 97%, 97.8%, 86%, and 99.1% respectively. Pulmonary vein obstruction was significantly more common in Scimitar patients compared to others (22.4% vs. 98.3%, $P < 0.0001$). Freedom from morbid events for different groups is shown in the table. Post-operative quantitative Lung perfusion scan in 13/15 Scimitar patients showed decreased right lung flow (mean 22.5%).

Conclusions: Surgical treatment of PAPVC is associated with excellent outcomes and low long-term morbidity. However, children with scimitar syndrome have an exceptionally high incidence of post-operative pulmonary venous obstruction and abnormally low perfusion of the right lung.

At 15 years	Freedom from re-operation	Freedom from caval obstruction	Freedom from pulmonary vein	Freedom from obstruction pacemaker implantation
R PAPVC to SVC (n=175)	97.8%	99%	97.9%	100%
R PAPVC to SVC: Baffle surgery (n=161)	97.3%	100%	97.5%	100%
R PAPVC to SVC: SVC re-implantation (n=14)	100%	90.9%	100%	100%
R PAPVC to R atrium (n=29)	100%	100%	100%	100%
L PAPVC re-implantation (n=22)	100%	100%	100%	100%
Scimitar (n=15)	83.9%	83.3%	22.4%	92.3%



NOTES

2:45 p.m. – 3:00 p.m.

33. Melburne Shunt Promotes Growth of Diminutive Central Pulmonary Arteries in Patients with Pulmonary Atresia, VSD and Major Aortopulmonary Collateral Arteries (MAPCA)

*M. A. Mumtaz; G. L. Rosenthal; A. Qureshi; L. R. Prieto; T. J. Preminger; R. Lorber; L. A. Latson;

*B. W. Duncan

Cleveland Clinic, Cleveland, Ohio

Background: We manage patients with pulmonary atresia, VSD, MAPCAs and diminutive central pulmonary arteries with a staged approach. The first procedure is a central end-to-side aortopulmonary shunt [Melbourne shunt (MS)] intended to cause growth and development of the central pulmonary arteries. We report our results of central pulmonary artery [PA] growth and outcome following MS.

Methods: Forty consecutive patients were followed after MS. The maximum pulmonary artery [PA] diameter was measured at the time of surgery and at subsequent catheterizations or surgery.

Results: Median branch PA size was 2 mm at surgery, 5.5 mm at first assessment [median 6.35 months] and 7 mm at most recent assessment (19.7 months). Mean Modified Nakata index (see Table 1) increased from 27 mm²/m² at surgery to 138 mm²/m² at first assessment and 176 mm²/m² at final assessment. There was one acute shunt failure from anastomotic stenosis. There were 4 deaths during a mean follow-up of 4.4 years. Four patients have irreversible pulmonary hypertension. Thirteen patients (32.5%) underwent 21 percutaneous interventions. Eight patients are in various stages of palliation. Twenty five patients [75%] have undergone complete repair, all requiring pulmonary artery augmentation at the time of complete repair. Two patients have undergone VSD fenestration after complete repair due to supra-systemic right ventricular pressure.

Conclusions: MS promotes growth of central pulmonary arteries allowing complete repair in majority of the patients. There is considerable need for additional interventions in these patients to augment the size of the pulmonary arteries.

Table 1. Surgical Data

Total Patients	40
Median Weight	5.25 kg
Median age	4 months
Mean preoperative saturation	64%
Mean postoperative saturation	79%
Median initial PA size	2 mm
Median PA size at 2nd assessment	5.5 mm
Median Final PA size	7 mm
Initial Mean Modified Nakata Index*	27 mm ² /m ²
Mean Modified Nakata Index* at 2nd assessment (N=27)	138 mm ² /m ²
Final Mean Modified Nakata Index (N=27)	176 mm ² /m ²

Modified Nakata index = (Max. right pulmonary artery cross sectional area in mm² + Max. left pulmonary artery cross sectional area in mm²) / BSA in m².

NOTES

MONDAY AFTERNOON

3:00 p.m. – 3:15 p.m.

34. Right Ventricle to Pulmonary Artery Conduit Longevity: Is It Related to Valve Size?

B. Askovich¹; C. A. Albaro²; T. Sower¹; L. L. Minich¹; *J. Hawkins¹; L. Tani¹; M. Puchalski¹

¹University of Utah, Salt Lake City, Utah; ²Vermont Children's Hospital, Burlington, Vermont

Background: Homograft conduits are routinely over-sized to account for somatic growth in children requiring pulmonary valve replacement. The objective of this study is to determine the effect of over-sizing on valve longevity.

Methods: We reviewed records of all patients undergoing pulmonary homograft placement for diagnosis, age, homograft type, time to re-operation and indication for surgery, between 1988 and 2006. Conduit size at the time of insertion was compared to normal pulmonary valve size for BSA (z-score). Multivariate Cox regression models with cluster analysis were constructed to assess risk of homograft over-sizing for valve failure. Kaplan-Meier analysis was used to obtain median freedom from replacement time.

Results: One-hundred and fifty conduits (z-score range -1.6 to +4.92, mean +1.8[±1.2]) were implanted in 133 patients (median age 5.4 years). Re-operation was required in 69/133 patients. The major indications for conduit replacement were stenosis (30%), insufficiency (24%) or a combination (36%). In the final multivariable Cox regression model, z-score at the time of homograft placement was a significant risk factor for valve failure after adjustment for confounders (per one unit increase in z, Hazard Ratio=1.26, p=0.025). Modeling z-scores as a dichotomous variable revealed that risk increases 81% when homografts with z-scores >+2.76 are used, compared to z-scores <+2.76 (p=0.022). Median freedom from replacement was 4.7 (95% CI, 4-5.56) years in the largest conduits and 8.18 (95% CI, 5.98-9.49) years in the smaller conduit group.

Conclusions: Homograft conduit over-sizing in the pulmonary position results in an increased risk of failure and decreased longevity in children.

NOTES

MONDAY AFTERNOON

3:15 p.m. – 3:30 p.m.

- 35. Accuracy of the Aristotle Basic Complexity Score for Classifying the Mortality and Morbidity Potential of Congenital Heart Surgery Procedures**
S. M. O'Brien¹; *D. R. Clarke²; *J. P. Jacobs³; B. Maruszewski⁴; *M. L. Jacobs⁵; *H. L. Walters, III⁶; *C. I. Tchervenkov⁷; *K. F. Welke⁸; Z. Tobota⁹; G. Stellin¹⁰; *C. Mavroudis¹¹; J. R. L. Hamilton¹²; *J. W. Gaynor¹³; M. Pozzi¹⁴; *F. G. Lacour-Gayet¹⁵
- ¹Duke University Medical Center, Durham, North Carolina; ²Children's Hospital, Denver, Colorado; ³The Congenital Heart Institute of Florida (CHIF) and Cardiac Surgical Associates (CSA), St. Petersburg and Tampa, Florida; ⁴Memorial Hospital Child's Health Centre, Warsaw, Poland; ⁵St. Christopher's Hospital for Children, Philadelphia, Pennsylvania; ⁶Wayne State University School of Medicine, Detroit, Michigan; ⁷Montreal Children's Hospital, Montreal, Quebec, Canada; ⁸Division of Cardiothoracic Surgery, Oregon Health and Science University, Portland, Oregon; ⁹Children's Memorial Health Institute, Warsaw, Poland; ¹⁰Policlinico Universita, Padova, Italy; ¹¹Children's Memorial Hospital, Chicago, Illinois; ¹²Freeman Hospital, Newcastle Upon Tyne, United Kingdom; ¹³The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; ¹⁴Royal Liverpool Children's Hospital Alder Hey, Liverpool, United Kingdom; ¹⁵Children's Hospital Heart Institute, Denver, Colorado

Financial Disclosure: S.M. O'Brien, Statistician for Data Warehouse and Analysis Center of the STS Database, Employment (full or part-time) ; D.R. Clarke, Chief Operating Officer and Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; J.P. Jacobs, CardioAccessm Inc., Ownership Interest (stock, stock options, patent or other intellectual property); Chair of the STS Congenital Database Taskforce, Consultant/Advisory Board; Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; Medical advisor for CardioAccess, Inc., Consultant/Advisory Board; B. Maruszewski, Chair of the EACTS Database Committee, Consultant/Advisory Board; Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; M.L. Jacobs, Member of the Board of Directors, Aristotle Institute Inc., Consultant/Advisory Board; Z. Tobota, EACTS congenital database, Employment (full or part-time) ; C. Mavroudis, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; J.R.L. Hamilton, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; J.W. Gaynor, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; M. Pozzi, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; F.G. Lacour-Gayet, Aristotle Institute Inc. (President, CEO, Chairman of the Board), Consultant/Advisory Board.

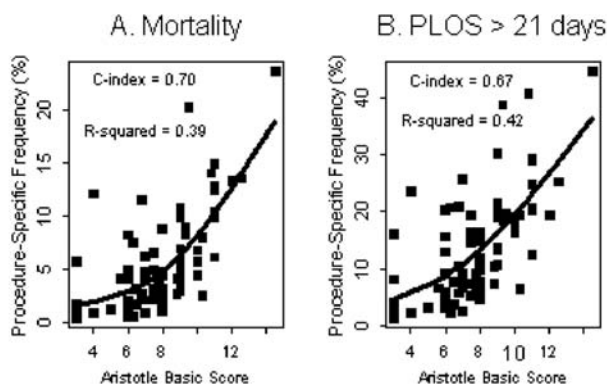
Background: The Aristotle Basic Complexity Score (ABCS) was derived by consensus of an international surgeon panel to facilitate assessment of surgical performance for quality improvement in congenital heart surgery. The utility of ABCS depends on its ability to correctly classify procedures based on their potential for morbidity, mortality, and technical difficulty. This collaborative study compared the ABCS to actual observed rates of mortality and prolonged post-operative length of stay (PLOS) by combining two large multi-institution databases.

Methods: Procedure-specific probabilities of hospital mortality and PLOS > 21 days were estimated in a hierarchical model for 83 congenital cardiac procedures (excluding procedures with N < 50) using both the EACTS congenital database (17,545 operations;

56 centers) and the STS congenital database (17,382 operations; 32 centers). The ability of the ABCS to discriminate low-risk vs. high-risk procedures was quantified by calculating the area under the receiver operating characteristics curve (C-index) and by estimating the proportion of explained variation in the procedure-specific event probabilities.

Results: While some individual procedures appear to be outliers (see Figure), the ABCS generally differentiates low-risk and high-risk procedures ($C = 0.70$ for mortality; $C = 0.67$ for PLOS) and explains a moderate amount of variation in procedure-specific event rates (R-squared = 0.39 for mortality; R-squared = 0.42 for PLOS).

Conclusions: The ABCS generally discriminates between high-risk and low-risk procedures making it a potentially useful covariate for case-mix adjustment in congenital heart surgery outcomes analysis. Future refinements to the Aristotle score will incorporate objective data for procedures with adequate sample sizes.



NOTES

STS PRACTICE EDUCATION SYMPOSIUM

Monday, January 29, 2007; 1:30 p.m. – 3:30 p.m.

Location: Room 32 A, B

Cardiothoracic Surgery Practice: State of the Art

Unless otherwise noted in this program book or verbally by the speakers, speakers have no relevant financial relationships to disclose and will only be presenting information on devices, products, or drugs that are FDA approved for the purposes they are discussing.

Symposium Description: The practice of cardiothoracic surgery is changing rapidly. The content of the practice, reimbursement and payor mix and the need to learn new skills have altered the terrain of traditional subspecialty practice. The practice education symposium offers insights into these changes and dealing with the new road maps of practice. Why are hospitals surviving better than surgical practices and can the surgeon benefit from this success? Do we need to really break from the past? Are there alternative tracks to individuals with an extensive education in cardiovascular and thoracic surgery? A series of expert speakers with practical experience address these and other pertinent matters of the modern medical environment.

- 1:30 p.m. Welcome and Announcements**
Moderators: *James R. Edgerton, Plano, Texas;
*Vinay Badhwar, St. Petersburg, Florida
Financial Disclosure: V. Badhwar, Medtronic, Inc, MCRI, Consultant/Advisory (including volunteer roles).
- 1:35 p.m. Roadmaps to Success: Forget the Rearview Mirror**
*Michael J. Mack, Dallas, Texas
Financial Disclosure: M. J. Mack, Edward Lifesciences, Boston Scientific, Consultant/Advisory Board (including volunteer roles).
- 1:55 p.m. Future Trends in Cardiothoracic Medicine**
Jim Field, Washington, District of Columbia
- 2:15 p.m. How Does the Hospital Make Money Off of Heart Surgery & Thoracic Surgery**
*Robert J. McKenna, Jr., Los Angeles, California
Financial Disclosure: R. J. McKenna, Jr., Gore (Monies to hospital to cover research project), Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received).
- 2:35 p.m. Physicians Who Take Business Tracks**
*John R. Liddicoat, Boston, Massachusetts
Financial Disclosure: J. R. Liddicoat, Medtronic, Employment (full or part-time), Viacor, Inc, (Founder, Shareholder), SentreHEART, Ownership Interest (e.g. stock options, patent or other intellectual property).
- 2:55 p.m. Successful Cardiothoracic Practice Models**
Drew Rector, Palm Harbor, Florida
- 3:15 p.m. Discussion – Questions and Answers**
*Robert W. Emery, Jr., Michael J. Mack, Jim Field, Robert J. McKenna, Jr.,
*John Liddicoat, Drew Rector
- 3:30 p.m. Adjournment**

 3:30 p.m. – 4:15 p.m. Break-Please Visit Exhibit Hall

BUSINESS MEETING (MEMBERS ONLY)

Monday, January 29, 2007, 4:15 p.m. – 6:00 p.m.

Location: Room 20

SURGICAL MOTION PICTURES

Monday, January 29, 2007

Location: Room 20

Moderators: *Malcolm M. DeCamp, Jr. and *Frank Pigula, Boston, Massachusetts

Financial Disclosure: M.M. DeCamp, Jr., Accuray, (1. Was a consultant during protocol development; 2. Currently an institutional investigator on a multiinstitutional trial.) Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received). SuperDimension, (Between 9/05-2/06, was a consultant and physician advisor to the company for purposes of applying to CMS for a new Ambulatory Procedure Code (APC) for this new procedure/device.) Consultant/Advisory Board (including volunteer roles).

Unless otherwise noted in this program book or verbally by the speakers, speakers have no relevant financial relationships to disclose and will only be presenting information on devices, products, or drugs that are FDA approved for the purposes they are discussing.

7:00 p.m. – 7:12 p.m.

I. Distal Tracheal Resection of a Primary Tracheal Neoplasm

*M. Lanuti; *D. J. Mathisen

Massachusetts General Hospital, Boston, Massachusetts

Long-term survival after surgical resection for adenoid cystic tracheal tumors is approximately 52% at five years and has been found to be independent of lymph node status. The locoregional extent of disease defines resectability. This video presentation depicts a 40-year-old woman who carries a diagnosis of adenoid cystic carcinoma involving the distal trachea. Her locoregional evaluation included bronchoscopy, esophagoscopy, endoscopic ultrasound and high-resolution chest imaging. She initially presented with presumed asthma and shortness of breath which did not improve on steroids. A large partially obstructing endoluminal mass was identified just about the tracheal bifurcation. She ultimately underwent bronchoscopy, mediastinoscopy, right thoracotomy, right hilar release, tracheal resection and reconstruction.

7:12 p.m. – 7:24 p.m.

2. Training the Cardiac Surgeon of the Next Millennium: Simulator Training for Coronary Angiography and Intervention

**J. Walkes¹; *M. J. Reardon¹; P. Kougiaris²; A. B. Lumsden²*

¹Methodist DeBakey Heart Center, Houston, Texas; ²Baylor College of Medicine, Houston, Texas

Background: Endovascular simulators have become common training tools for interventional cardiologists and vascular surgeons. We would like to report our early experience in the use of coronary simulation techniques for the training of cardiac surgeons and fellows.

Methods: A Simsuite Education System was used to train a practicing cardiothoracic surgeon to perform coronary angiography and PTCA. The simulator consisted of imaging controls, physiologic monitors, a gantry, a lab work station and an invasive drug control system. Training involved a three-phase learning process: a prebrief (patient presentation), simulation (procedure phase) and a postbrief (debriefing and metrics) protocol.

Results: In each of the scenarios, the cardiothoracic surgeon was able to successfully perform an intervention according to the guideline standards. Scoring of the aptitude to do coronary angiography was based on a metric system. The metric system, in addition to answers to self-assessment questions, was used to provide constructive feedback to the surgeon.

Conclusions: Endovascular techniques have gradually encroached on open coronary bypass volumes across the United States. The recent approval of drug eluting coronary stents further reduced the number of interventions required for restenosis. Very few cardiac surgeons have been trained to perform endovascular coronary interventions, although an increasing number are gaining similar peripheral endovascular skills. Coronary intervention training represents a potential additional pathway for training in endovascular skills. Validation of the quantitation process is currently underway to determine whether simulation training can be used to replace all or part of open case experience.

7:24 p.m. – 7:36 p.m.

3. Aortic Translocation in the Treatment of Complex Forms of Transposition of the Great Arteries: An Expanded Indication

**B. Alsoufi; *W. G. Williams; *C. A. Caldarone; *G. S. Van Arsdell*

Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada

Background: Aortic translocation with biventricular outflow tract reconstruction, originally described by Nikaidoh, is a surgical alternative that may be superior to Rastelli procedure for the treatment of transposition of the great arteries (TGA) associated with ventricular septal defect and left ventricular outflow tract (LVOT) obstruction as it offers a more “normal” anatomy. This technique can be applied in the management of other complex forms of TGA.

Methods: Seventeen-year-old child, an extremely rare natural survivor with TGA, intact ventricular septum and fixed LVOT-obstruction. Following division of the ascending aorta, the coronary arteries were detached and mobilized to allow coronary transfer. The aortic root autograft was mobilized from the right ventricle similar to the pulmonary autograft in the Ross procedure. Pulmonary artery was opened, Pulmonary valve excised, and LVOT enlarged by debridement, myectomy and incision into the conal septum similar to the Konno procedure. LVOT was reconstructed with a Dacron patch, and the mobilized aortic root was repositioned into the LVOT. The Lecompte maneuver was performed. The left coronary was attached to the autograft. The aortic root was re-anastomosed to the distal aorta, followed by re-implantation of the right coronary button. The right ventricular outflow tract was reconstructed with a homograft.

Results: The patient had excellent hemodynamics, uneventful recovery, and great symptomatic relief on follow-up.

Conclusions: Aortic translocation is an excellent surgical technique. Its application can be expanded to other forms of complex TGA such as corrected TGA, double-outlet right ventricle, and TGA with intact septum and complex fixed LVOT-obstruction.

MONDAY
EVENING

7:36 p.m. – 7:48 p.m.

4. Transcervical Thymectomy for Non-Thymomatous Myasthenia Gravis

**J. C. Kucharczuk; *J. Shrager; *L. R. Kaiser; *J. D. Cooper*

University of Pennsylvania, Philadelphia, Pennsylvania

Myasthenia gravis (MG) is an autoimmune disorder in which anti-acetylcholine receptor antibodies reduce the number of functionally available acetylcholine receptors at the neuromuscular end plate. Clinically, this is manifested by muscle weakness and muscle fatigability. The exact role the thymus plays in this disease remains poorly understood. Nevertheless, observations made more than 50 years ago by Blalock suggest that surgical thymectomy may be useful to induce remission of the disease. Currently, the practice parameter from the American Academy of Neurology suggests that “for patients with non-thymomatous autoimmune MG, thymectomy is recommended as a option to increase the probability of remission or improvement.” Thus, once medically optimized, all patients with MG should be considered for thymectomy. Unfortunately, precise preoperative selection criteria for patients likely to achieve remission have not been defined. Likewise, the extent of operation required, either radical or simple thymectomy has not been established. This surgical video demonstrates the transcervical approach to thymectomy in autoimmune, non thymomatous, MG. Emphasis is placed on our operative technique and outcomes data.

7:48 p.m. – 8:00 p.m.

5. Transapical Aortic Valve Implantation in Man

*S. V. Lichtenstein; A. Cheung; J. Ye; R. G. Carere; C. R. Thompson; J. G. Webb
University of British Columbia, Vancouver, British Columbia, Canada

Financial Disclosure: J.G. Webb, Consultant, Consultant/Advisory Board

This abstract describes the use of Cribier-Edwards Valve which has not been FDA approved.

An 87-year-old frail female, presented with SOBOE, chronic anemia and two pillow orthopnea. Angiography and echocardiography revealed CAD (60% LAD, 90% RCA) with severe MR and moderate TR. Severe AS (AVA = 0.6 sq cm., Grad = 44 mmHg mean). Prior AVR attempt at another center aborted because of "Porcelain Aorta." Because of iliofemoral disease she was referred for transapical aortic valve implantation.

With left chest slightly elevated a small incision (~5 cm.) was made in the left anterior chest wall in the 5th intercostal space. The pleura was entered and the apex of the heart identified. The pericardium was opened and secured to the chest wall. Pacing wires were attached to the LV and rapid pacing (160-200 beats /min.) used to decrease forward flow during balloon valvuloplasty and deployment of a 26mm Cribier-Edwards™ Valve (Edwards LifeSciences Inc., Irvine, CA). Fluoroscopy and TEE were used for positioning of the valve at the aortic annulus. The balloon and valve were introduced through a 24 French catheter advanced through the apex of the LV over a previously placed wire which extended through valve and down the thoracic aorta for stability. After deployment of the valve, gradient, orifice, mobility of leaflets and regurgitation were evaluated. The catheters were removed and initially placed pledgeted orthogonal sutures tightened to secure hemostasis of the LV apex. Pericardium was approximated at mid point to prevent herniation. A left chest tube was inserted and thoracic incision closed.

8:00 p.m. – 8:12 p.m.

6. Cervico-Thoracic Approach for Vascular Resection in Anterior Pancoast Tumor

*L. Spaggiari; D. Galetta; M. D'Aiuto; G. Veronesi; F. Leo; P. Solli; F. Petrella; *R. Gasparri; A. Borri; P. Scanagatta

Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy

Background: Surgery of apical NSCLC often requires a cervico-thoracic vessel resection to achieve local control of the disease. We present our experience in cervico-thoracic vascular resection (subclavian, carotid, and SVC) and reconstruction associated with lung anatomic resection in the treatment of apical Pancoast tumor.

Methods: From May 1998 to May 2004, 41 consecutive patients with anterior Pancoast NSCLC were operated on using an anterior approach: transmanubrial approach (TMA) in 24 cases (58.5%), hemiclamshell approach (HA) in 15 (36.5%), and combined TMA + HA in 2 (5%). Eleven patients (26.8%) underwent vascular resection/reconstruction: subclavian artery (n=3), subclavian and carotid artery (n=1), subclavian/innominate vein (n=5), superior vena cava (n=3). The video reports the patient who underwent carotid and subclavian artery resection associated with lobectomy through TMA alone.

Results: Complete resection was achieved in 97.5% (40/41 cases). No intraoperative or postoperative mortality occurred. Morbidity rate was 41% (n=17); major complications occurred in 10 patients (24%). Eighteen patients (45%) had distant recurrence and 5 (12.5%) loco-regional relapse. Three- and five-year survival were 35% and 27%, respectively. At last follow-up 14 patients (36.8%) are still alive. Type of extended resection, T status, and pathological stage (IIB vs. IIIB) influenced survival (p=0.008, p=0.039, and p=0.033, respectively). A worse prognosis was seen in the group that required both chest wall and vascular resection (2-years survival: 0%).

Conclusions: The TMA allows a good exposure of cervico-thoracic structures and a feasible and safe vessel resection. Vascular involvement in anterior Pancoast tumor is a negative prognostic factor.

8:12 p.m. – 8:24 p.m.

7. Monobloc Aorto Mitral Homograft Implantation Technique as a Treatment of Complex Cases of Endocarditis

**S. Chocron, Sr.; D. Kaili; D. Buklas; C. Taberlet; J. Etievent*

Hopital Jean Minjoz, Besancon, France

A 34-year-old male drug addict was admitted with a diagnosis of mitral staphylococcal endocarditis and operated in our hospital in December 2005. A complex mitral valvuloplasty was performed. Six months later he presented with a recurrent streptococcal endocarditis involving both the aortic and mitral valves and the intervalvular fibrous body. Aortic insufficiency was severe and mitral regurgitation graded as mild. This video shows the implantation technique of a monobloc aorto-mitral homograft.

8:24 p.m. – 8:36 p.m.

8. One-Stage Norwood-Rastelli Procedure with Regional Perfusion

W. Kim

Seoul National University Children's Hospital, Seoul, Republic of Korea

Hypoplastic left heart syndrome encompasses a spectrum of structural cardiac malformations. Among them, approximately 5% of neonates born with aortic atresia have a fully developed left ventricle (LV) in association with a ventricular septal defect (VSD) and a normal mitral valve (MV). This subgroup has a potential for biventricular repair.

A newborn boy was noted with severe heart failure after birth. Echocardiography revealed aortic atresia, a 2-mm ascending aorta, large VSD and normal LV and MV. He was taken to the operating room on day seven after birth (3.1 kg). Our approach was to perform biventricular repair at one stage. The arterial cannula was placed in the PDA initially. After cardioplegic arrest, the VSD was closed so as to baffle LV blood into the pulmonary valve. During Norwood procedure, the arterial cannula was transferred to the ascending aorta and maintained regional perfusion of the innominate artery. The rudimentary ascending aorta was transected and reimplanted onto the main pulmonary artery (MPA). After all ductal tissue was resected, the proximal MPA was anastomosed to the undersurface of arch and descending aorta. Continuity between the right ventricle and the distal MPA was established by non-valved conduit. Total cardiopulmonary bypass time, cross-clamp time, and circulatory arrest time were 233, 120, and 4 minutes, respectively. Weaning from cardiopulmonary bypass was uneventful. The patient was weaned from the ventilator on the 6th postoperative day. This patient underwent RV-to-PA conduit change three years later. Now he is five years old with good clinical state.

8:36 p.m. – 8:48 p.m.

9. The Cox-Maze IV Procedure for Atrial Fibrillation

*R. J. Damiano, Jr.; M. S. Bailey

Washington University School of Medicine, St. Louis, Missouri

Financial Disclosure: R.J. Damiano, Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Atricure, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Consultant/Advisory Board; Atricure, Consultant/Advisory Board

Regulatory Disclosure: This abstract describes the use of Medtronic Cardioblate bipolar surgical ablation device which has been FDA approved for surgical treatment of atrial fibrillation.

This case is a 57-year-old woman who has been in paroxysmal atrial fibrillation for 18 months. She also had a coronary artery fistula from the left anterior descending coronary to the pulmonary artery. She had no other coronary disease and her echocardiogram showed a left atrial diameter of 4.6 cm with no valvular disease. The video describes our current technique to perform the entire lesion set. In this procedure, most of the incisions of the traditional cut-and-sew Cox-Maze procedure have been replaced with ablation lines. Most of the ablation lines are performed using a bipolar radiofrequency device. The lesions to the mitral and tricuspid annulus are made using a linear cryoprobe. The video details our technique and particularly our use of pacing to document pulmonary vein isolation. It also illustrates how to perform the left atrial isthmus lesion using a combination of bipolar radiofrequency ablation and cryoablation. We have now performed this procedure in over 150 patients with a one-year freedom from atrial fibrillation of over 90%. Using propensity matching, our results have been similar to those which we have obtained with the cut-and-sew Cox-Maze procedure in the past.

8:48 p.m. – 9:00 p.m.

10. Repair of Anomalous Origin of the Right Coronary Artery From the Left Sinus of Valsalva: The Unroofing Technique

*S. Emani; B. Z. Atkins; *J. Jagers*

Duke University Medical Center, Durham, North Carolina

Anomalous aortic origin of the coronary artery is associated with sudden death. Although the indications for repair of anomalous right coronary artery from the left sinus of Valsalva are controversial, we present a patient with symptoms thought to be related to coronary ischemia. This video demonstrates coronary artery unroofing technique for repair of anomalous origin of the right coronary artery from the left sinus of Valsalva. This technique can be used if the anomalous coronary artery takes an intramural course.

STS WORKFORCE ON INTERNATIONAL RELATIONSHIPS SYMPOSIUM

Current Issues for CT Surgeons Across All Borders

Monday, January 29, 2007; 7:00 p.m. – 9:00 p.m.

Location: Room 32 A, B

Symposium Description: The practice of cardiovascular medicine in general and cardiac surgery in particular has become internationalized, and there are increasing global forces that make the dynamics of cardiovascular surgery more challenging and competitive. In the past, trainees often remained in the country where they received their advanced clinical and research training. Recently, there has been a reversal of these trends and practitioners are returning to their home countries, providing world-class care and attracting a broad range of patients to their centers of excellence.

This “reverse migration,” which could have a substantial impact on the U.S. health care system, has contributed to two new phenomena. Today, medical tourism no longer refers only to low-cost cosmetic procedures; it includes affordable major procedures for middle-income Americans who can’t afford (or whose insurance company won’t cover) expensive but necessary operations. And, as stem cell research continues to be a political football in the U.S., international transplant programs, once languishing, are now beginning to reinvent and revitalize themselves.

Attendees will gain insight into these trends and their implications. Internationally renowned speakers—Drs. Kitipan Arom, Michael Horowitz, Luis Felipe Rivas, and Noedir Stolf—will discuss the administrative structure, operation, marketing, and outcomes of these international centers, and provide analysis of the economic, legal, and ethical aspects of operations and management. Also, Drs. Jack Matloff, W. Gerald Rainer, Aurelio Chaux, and Tomas Salerno will also lead a panel discussion to allow opportunity for a lively and interactive exchange among panel members and attendees addressing these and other issues affecting cardiothoracic surgery around the world. The audience will also be actively encouraged to participate.

7:00 p.m. Welcome and Opening Remarks

**Jack Matloff, Los Angeles, California*

7:10 p.m. Medical Tourism in a Global CT Arena

**Kitipan Arom, Bangkok, Thailand; *Michael D. Horowitz, Kennesaw, Georgia*

7:50 p.m. International Transplant Program Current Status and Future Potential (Including Stem Cell Research)

*Noedir Stolf, Sao Paulo, Brazil; *Eduardo Cadavid-Alvear, Cali, Colombia*

8:30 p.m. Panel Discuss, Q&A, Audience Feedback

**Jack Matloff, Los Angeles, California; *W. Gerald Rainer, Denver, Colorado;
*Aurelio Chaux, Los Angeles, California; *Tomas Antonio Salerno, Miami, Florida;
All Participants*