posed during systemic cooling to 23-25°C. (Lower temperatures may be used if deemed necessary - e.g. deficient communicating arteries etc.) CE Mid-Atlantic Heart is then performed without the time consuming distraction of a shunt, since severe stenoses are corrected during CABG as follows: cardiopulmonary carotid doppler studies, then MRI or conventional angiography if appropriate.

true simultaneous surgery. Now, even more patients undergoing coronary bypass (ICABG) will demonstrate durable long-term results and a continued low risk of late complications after mitral valve reconstruction using Carpenter techniques. This experience suggests that mitral valve reconstruction should be considered the procedure of choice for nonhemiearatic patients with mitral valve insufficiency.

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Myogenic Responses and Intrinsic Tone of Coronary Arterioles are Altered by Cardiopulmonary Bypass and Cardioplegia

Myogenic properties and intrinsic tone of vascular smooth muscle are important mechanisms in the regulation of coronary blood flow and systemic vascular resistance. To examine if CPB and cardioplegic arrest alter myogenic reactivity and the intrinsic tone in the coronary microcirculation, pigs were placed on CPB. Selected hearts (n = 6) were arrested with a cold, hyperkalemic ([K+] = 25 mM) crystalloid cardioplegic solution for 1 hour. In another group (n = 6), hearts were arrested and then reperfused with warm blood for 1 hour, or pigs were placed on CPB without cardioplegia (n = 6). Coronary arterioles were studied in a pressurized, no-flow state with video-microscopy. Myogenic reactivity was examined to stepwise increases in intraluminal pressure from 10 to 100 mmHg. The vessel diameter was normalized to the diameter at 50 mmHg after application of papaverine (10-4 M). In vessels from non-instrumented control hearts (n = 6) and vessels in the CPB group, myogenic contraction was observed with pressures >40 mmHg. However, CPB significantly shifted the pressure-diameter relation upward (p < 0.05 vs control), suggesting a decrease in the intrinsic tone. Cardioplegic arrest, with or without reperfusion, decreased myogenic reactivity with an upward displacement of the pressure-diameter relation (both p < 0.05 vs control). Myogenic reactivity of the control vessel was not altered after mechanical denudation of the endothelium, or following pretreatment with N3 nitro-L-arginine or indomethacin. However, blockade of the ATP-sensitive potassium channel by glybenclamide significantly attenuated the cardioplegia-induced decrease in myogenic reactivity (p < 0.05).

These results suggest that coronary microvascular myogenic reactivity and the intrinsic tone are reduced following hypothermic cardioplegia, and that CPB alone preserves myogenic reactivity but reduces the intrinsic tone of the vascular smooth muscle.

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Management of coexisting carotid and coronary disease has always aroused debate. Now, even more patients undergoing coronary bypass (CABG) will require consideration of carotid endarterectomy (CE), since randomized trials show that prophylactic CE benefits even certain asymptomatic patients with severe carotid stenoses. We propose a management plan and a unique operative strategy of truly simultaneous surgery. All CABG patients with carotid bruits or cerebral symptoms undergo carotid doppler studies, then MRA or conventional angiography if appropriate. Severe stenoses are corrected during CABG as follows: cardiopulmonary bypass is begun and the left ventricle is vented. The carotid artery is exposed during systemic cooling to 23-25°C. (Lower temperatures may be used if deemed necessary — e.g. deficient communicating arteries etc.) CE is then performed without the time consuming distraction of a shunt, since profound hypothermia provides cerebral protection. Ventricular fibrillation is inevitable at these low temperatures and is ignored. After CE, systemic rewarming is begun while the cardiac procedure is performed with myocardial protection according to the surgeon’s preference. The neck is closed after protamine is given.

Since January 1993, 29 patients have had combined CABG and CE by this protocol with no strokes and no deaths. This approach offers substantial advantages in outcome, efficiency, patient convenience, and cost, and we strongly recommend its wider use.

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Monomorphic versus Polymorphic Ventricular Tachycardia After Coronary Artery Bypass Grafting

We hypothesized that 1) ventricular tachycardia and fibrillation (VT/VT) developing after coronary artery bypass grafting (CABG) are due to either restoration of perfusion to a chronic infarction or to peri-operative ischemia/infarction and 2) that VT morphologic and electrophysiologic characteristics would depend upon which mechanism was causal. Records of 17 pts referred for electrophysiologic studies (EPS) whose first episode of VT/VT occurred peri-operatively were compared to a control group of 119 consecutively CABG pts without VT/VT. Results: Pts with VT/VT had more depressed pre-operative ejection fraction (0.32 vs 0.49, p = 0.0001) and a higher incidence of peri-operative myocardial infarction (MI) (47% vs 8%, p = 0.0001) compared to control pts. The majority of VT/VT pts (88%) had a zone of prior infarction and placement of a bypass graft to an occluded vessel occurred more frequently in these subjects compared to controls (p = 0.03). The majority of pts having monomorphic VT (84%) did not suffer a peri-operative MI and 80% had inducible monomorphic VT at EPS. Only 37% of pts having polymorphic VT were inducible and 67% had a peri-operative MI. Conclusion: New onset monomorphic VT after bypass surgery is associated with an old infarct scar and may, in some cases, be due to revascularization of an area of prior infarction. Polymorphic VT/VF is usually associated with acute ischemia/infarction.

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The natural history of patients (pts) undergoing surgical repair of ostium primum defects in adults

The natural history of patients (pts) undergoing surgical repair of ostium primum septal defects (ASD-1) in adulthood remains unclear. We followed 33 pts who underwent surgical correction of ASD-1 at our institution at ages 20-73 years (mean = 42). 12 of these patients were over the age of 50 at the time of surgery. Moderate preoperative exercise incapacity (NYHA Class >2) was present in 4 pts, and 6 were in atrial fibrillation. Preoperative mean pulmonary artery pressure >25 mmHg, pulmonary vascular resistance >4 Wood units, or moderate-severe mitral regurgitation was present in 8, 4, and 5 pts, respectively. Autologous pericardium was used to patch the ASD-1 in 30 pts (91%). Mitral valvuloplasty, consisting of cleft repair (n = 10) and mitral valve replacement (n = 2), were performed selectively. At a mean follow-up of 5.3 years (1 month-18.2 years), all 28 surviving pts are free of exercise limitation (NYHA Class 1). Late post-operative deaths have occurred in 5 pts (15%); related to myocardial infarction, stroke, hepatic failure, renal failure, or sepsis. Reoperation was required in 2 pts (6%); for a residual ASD-1 (n = 1), and severe mitral regurgitation (n = 1), both within the first postoperative year. The presence of advanced age at operation, symptoms, atrial arrhythmias, mitral regurgitation, or moderately increased pulmonary vascular resistance did not predict late postoperative mortality, complications or functional capacity.

Conclusion: ASD-1 can be repaired in adult pts with the expectation of excellent long-term results, independent of age at operation and preoperative mitral valve function; and despite the presence of atrial fibrillation, or moderately elevated pulmonary vascular resistance.

Left Ventricular Ejection Fraction Improves Late After Aortic Valve Replacement in Patients with Aortic Stenosis and Reduced Ejection Fraction

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To assess the time course and magnitude of change in left ventricular (LV) wall stress and ejection function indices, 24 patients undergoing aortic valve replacement (AVR) for aortic stenosis were prospectively evaluated.