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Variable	Ventilatory Support n (%)		ICU LOS (days)		(days)		Survival (4-year) [†] (%)	
	<70	≥70	<70	≥70	<70	≥70	<70	≥70
Age (yrs)								
COPD	25 (15)	17 (35)	6*	10*	15	24	81	56
No-COPD	36 (8)	19 (15)	4	5	11	16	92	85
Smoker	27 (12)	6 (23)	5	11	12	28	87	60
Non-Smoker	34 (9)	30 (19)	4	6	12	16	91	80
FEV ₁ (L)								
<2.0	9 (13)	6 (30)	5	7	14*	17	76*	24*
2.0-3.0	24 (12)	9 (12)	5	7	12	16	87	80
> 3.0	6 (3)	2 (10)	4	5	10	15	94	93

*p < 0.05 (univariate/multivariate log-rank tests), † Kaplan-Meier method

Preoperative FEV₁ significantly affected LOS in the hospital only in the patients <70 years of age (p = 0.0001). Delayed extubation (> 48 hrs) had resulted in prolonged LOS in the ICU and in the hospital for patients <70 years (p = 0.0001, p = 0.0001, respectively) and patients ≥70 years (p = 0.0001, p = 0.0001, respectively). The 4-year survival after CABG for young and old patients was significantly influenced by the level of preoperative FEV₁ (p = 0.0004, p = 0.0282, respectively). We conclude that preoperative FEV₁ is a significant predictor of 4-year survival in the young and aged individuals undergoing CABG.

952-126 Is Serotonin an Unexpected Cause of Arterial Graft Spasm? Dynamic vs Static Evaluation of Porcine Internal Thoracic Arteries

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We compared the effect of serotonin (5HT) and norepinephrine (NE) on internal thoracic artery (ITA) spasm in both a dynamic perfusion system and static arterial ring preparation. Porcine ITAs (N = 12, 2.0-2.5 mm) were mounted on a computer controlled perfusion apparatus. Inflow pressure (80 mmHg) and outflow resistance were adjusted to simulate high (80-100 mL/min) and normal (15-20 mL/min) graft flow. Pressure and flows were examined at baseline and after adding NE and 5HT. In addition, rings (N = 15, 3.0 mm) were mounted on a tension gauge and contractions in response to NE and 5HT were obtained.

Flow State	Distal Pressure (mmHg)		Flow (ml/min)		ED ₅₀ (-log M)
	Baseline	Final	Baseline	Final	
NE Treated ITAs (N = 5, 10⁻⁹ to 10⁻⁵ M)					
NORM	78.0 ± 0.6	77.6 ± 0.5	15.6 ± 1.9	15.3 ± 1.7	NoResponse
HIGH	63.2 ± 2.2	27.0 ± 1.9*	99.4 ± 5.0	45.4 ± 2.7*	8.04 ± 0.58
5HT Treated ITAs (N = 7, 10⁻⁹ to 10⁻⁵ M)					
NORM	77.2 ± 2.2	57.8 ± 7.5*	19.1 ± 7.9	10.9 ± 0.6*	6.35 ± 0.55
HIGH	60.3 ± 3.8	21.9 ± 2.2*	78.7 ± 4.4	26.7 ± 3.6*	6.59 ± 0.34

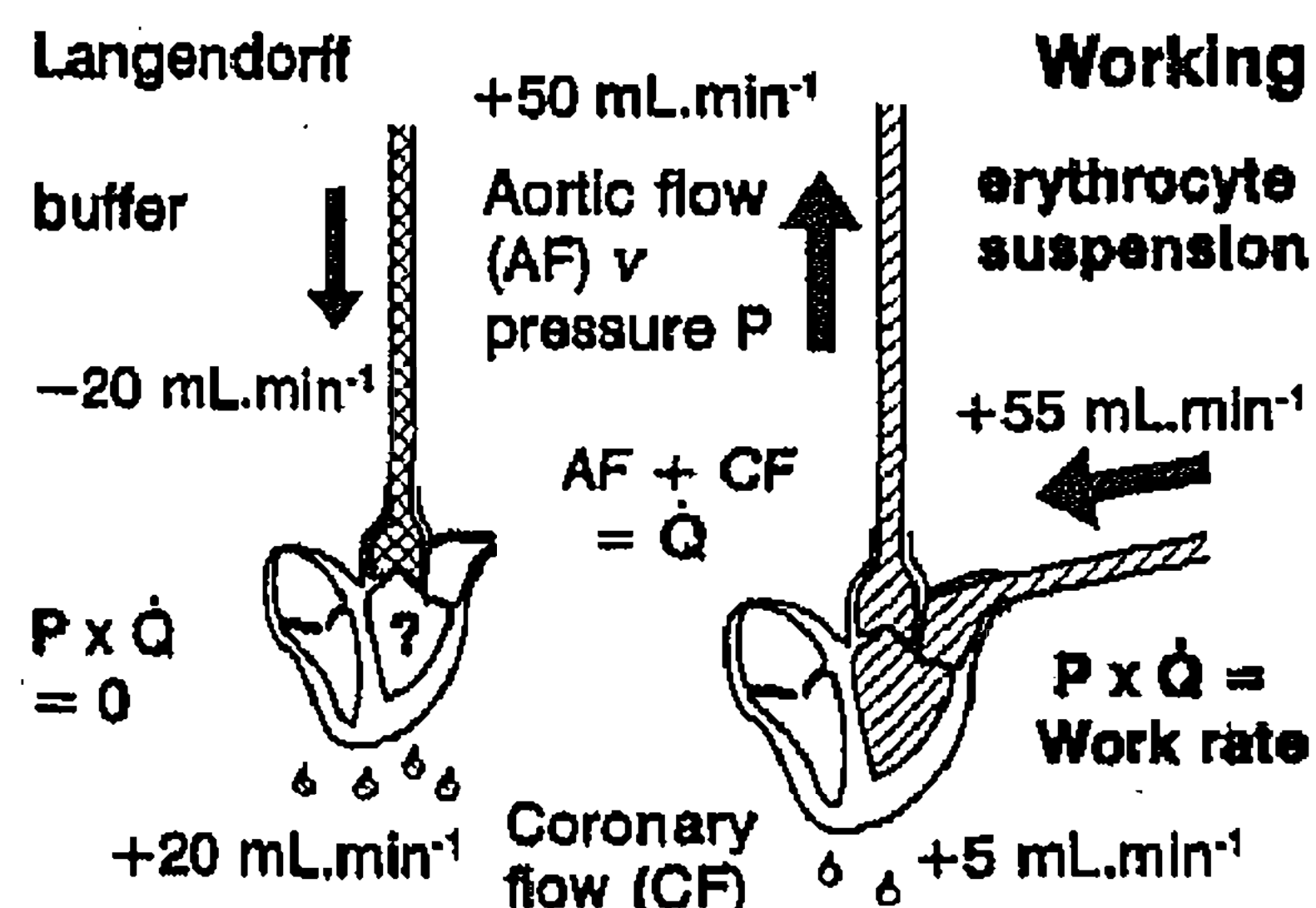
Mean ± SE, *p < 0.05 compared to Baseline

Under high graft flow conditions, NE and 5HT caused significant decreases in flow and distal pressure with 5HT the most potent (66.1% ↓ in flow). Under normal graft flow conditions, NE caused no decrease in flow or distal pressure whereas 5HT caused a significant decrease in flow (42.9% ↓) and distal pressure. Static rings treated with NE and 5HT gave similar dose response curves with no significant differences in ED₅₀ (NE: 6.71 ± 0.1 vs 5HT: 6.92 ± 0.1). These results suggest an interaction between flow and 5HT which may augment its capacity as a vasoconstrictor. Graft flow may be an important but overlooked element in the generation of spasm induced by endogenous vasoconstrictor substances. The clinical importance of 5HT potency may have previously been underestimated.

952-127 Essential Improvements to a Working, Isolated Rat Heart Model With Hemodynamic and NMR Spectroscopic Monitoring

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To the cardiac surgeon, effective cardioprotection means recovery of heart function after ischemia, and an experimental model to test cardioprotective techniques should offer some means of predicting damage. Loss of phosphocreatine (PCr) is a very early indicator of myocardial metabolic compromise; we therefore developed an ejecting rat heart model in which the left atrium and aorta are cannulated, the perfusate is a suspension of bovine erythrocytes in artificial plasma to ensure adequate oxygen and metabolite supply, and in contrast to a Langendorff model, the heart performs real work inside the bore of an NMR spectrometer (typically 55 mL.min⁻¹ aortic output against 13 kPa; see diagram).



A new phosphorus NMR spectrum can be obtained every five minutes, giving on-line, nondestructive measurement of high-energy and inorganic phosphates and intracellular pH. During pilot experiments, the hearts hung in air at 37°C and typically recovered 90% of left ventricular output after 20 min ischemia. However, we have now introduced a miniature temperature sensor into the right ventricle, and with the heart immersed in a thermostatically controlled bath, and a heat exchanger in the Langendorff perfusion line to maintain real normothermia (38°C), this degree of damage occurs after only 10 min, at which time PCr reaches a very low level (<25% control); in air at 37°C with relative humidity less than 100%, rapid cooling occurs. Immersion of the heart in erythrocyte-free solution also depresses functional output, while immersion in the erythrocyte suspension has no effect on work output. A tightly-controlled, repeatable model such as this is essential for basic research into cardioprotection.

952-128 Bleeding With Coronary Artery Bypass Surgery (CABG) in Patients Treated with a Platelet Glycoprotein IIb/IIIa Inhibitor

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There is concern that the use of IIb/IIIa inhibitors for angioplasty (PTCA) or unstable angina may be associated with increased bleeding if CABG is later required. We examined perioperative bleeding and blood product use in patients undergoing in-hospital CABG in the IMPACT II trial (evaluating Integrilin in PTCA). Hematological change variables (pre-bypass value minus in-hospital nadir), blood product use, bleeding index (BI, ΔHct/3 + # units transfused), and clinical outcomes at 30 days are shown. Values are median (25th, 75th percentiles) or n (%).

	Integrilin hi dose (n = 37)	Integrilin lo dose (n = 44)	Placebo (n = 53)
ΔHgb	6(4, 7)	5(4, 6)	5(4, 7)
ΔHct	18(14, 20)	16(11, 19)	17(13, 22)
Δplatelets × 1000	60(21, 103)	69(-6, 113)	87(32, 129)
PRBC units	2(0, 4)	2(0, 4)	2(0, 4)
FFP units	0(0, 2)	0(0, 1)	0(0, 0)
platelet units	0(0, 2)	0(0, 2)	0(0, 1)
BI	9(6, 10)	6(5, 10)	7(6, 10)
death (30 days)	2(5%)	1(2%)	4(8%)
MI (30 days)	10(27%)	11(25%)	17(32%)

In a multivariable model (including clinical characteristics), treatment arm was not a significant predictor of BI.

Conclusion: Use of Integrilin, a potent platelet inhibitor, to manage ischemic complications of PTCA does not seem to be associated with more severe bleeding with later CABG or more frequent transfusions. 30-day outcomes also appeared favorable in this small sample.

952-134 Complete Myocardial Revascularisation with Transmyocardial Laser as an Adjunct to CABG without Cardiopulmonary Bypass

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There is a large group of patients where conventional bypass grafting cannot be adequately accomplished in all territories because of diffuse disease or lack of distal targets. Many of these patients are at high risk because of severe systemic disease, aortic atherosclerosis, advanced age etc. TMLR as an adjunct to CABG offers a new approach whereby total myocardial revascularisation can be achieved in these patients without the use of CPB. TMLR combined with CABG on beating heart without CPB has been performed on 56 patients. Age ranged from 37-81 years (mean 56.17 ± 10.36). The mean LVEF was 44.59 ± 10.04. Nine patients had EF < 35%. Mean number of vessels bypassed were 1.09. IMA was used in all cases. 4 patients were in renal

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