SUPERIORITY OF RETROGRADE CORONARY SINUS CARDIOPLEGIA OVER ANTEGRADE CARDIOPLEGIA FOLLOWING REVASCULARIZATION OF AN ACUTE CORONARY OCCLUSION

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Since Antegrade Cardioplegia (ARP) may limit the distribution of cardioplegia beyond a coronary occlusion, this study was undertaken to determine whether Retrograde Coronary Sinus Cardioplegia (RCSP) provides superior myocardial protection during revascularization of an acute coronary occlusion. In twenty adult pigs, the second and third diagonal branches were occluded with a snare for 1 1/2 hours. Animals were then placed on cardiopulmonary bypass and underwent 30 minutes of ischemic arrest with multidose, potassium, crystalloid cardioplegia. In 10 animals, cardioplegia was given through the aortic root (ARP), while in 10 others it was given through the coronary sinus (RCSP). Following the arrest period, the coronary snares were released and all hearts were reperfused for 3 hours. Postischemic damage in the myocardium beyond the occlusions was assessed by wall motion scores using 2-D echo (4=normal to 0=dyskinesia), myocardial pH (Khuri tissue probe) and the Area of Necrosis/Area of Risk (histochemical staining). Results : MEAN±SE; *p<.05

	ARP	RCSP
Myocardial pH	6.82±.12	7.23±.14*
Area of Necrosis/Area of Risk (%)	71±3	43±4*
Wall Motion Score	1.3±.3	2.0±.6

We conclude that RCSP provides more optimal myocardial protection than is possible with ARP following revascularization of an acute coronary occlusion.

VALVE RE-REPLACEMENT IN CHILDREN

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From 1974 to 1985 11 pts, mean age 9 yrs (1.5-17 yrs), underwent prosthetic valve re-replacement. The primary valvular lesion was congenital in 9 pts and acquired in 2. In 5 pts previous valve repair had been performed. The first valve replacement was for a single valve in 9 pts (6 mitral, 2 pulmonary and 1 truncal) and for 2 valves in 2 pts (1 mitral and aortic, 1 mitral and tricuspid). At re-replacement the size of the new implanted prosthesis was larger in 10 cases and the same external size but larger effective area in 3. Mechanical valves were used in 11 cases and bioprostheses in 2 (pulmonary). There were no early deaths. In a mean follow-up of 7.5 yrs (4-15 yrs) there were 2 late deaths, one after 4 yrs (accidental drowning) and one after 5.5 yrs (sudden death). Five pts had a third prosthetic valve re-replacement (in 2 cases for 2 valves), and one underwent successful heart transplantation. All 9 survivors are in I Class NYHA, and one pt had uncomplicated pregnancy.

Conclusions: prosthetic valve re-placement in children, usually required by outgrowth of the prosthesis, may be performed with low risk, with a larger size valve, and with good late results.

EFFECT OF PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY ON SURGERY FOR SINGLE VESSEL CORONARY ARTERY DISEASE

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Indications for coronary artery bypass (CAB) in pts with single vessel coronary disease (SVD) have changed because of the excellent natural history of these pts with medical therapy. Also, interventional cardiology techniques such as angioplasty (PTCA) can be used in many of these pts although restenosis may finally require CAB. To assess the impact of PTCA on CAB for SVD, pts undergoing CAB for SVD at Mayo Clinic from 1983-1987 were reviewed to identify reason for CAB compared to PTCA. During this time there were 99 pts; the majority were Canadian Cardiovascular Society Functional Class III or IV (75%). The indication for CAB varied over time:

	1983	1984	1985	1986	1987
N	25	19	14	29	12
Anatomy unsuitable for PTCA	11(44%)	5(26%)	4(29%)	12(41%)	4(33%)
Failed PTCA	8(32%)	11(58%)	5(36%)	7(24%)	1(8%)
Pt preference	1(4%)	2(11%)	2(14%)	2(7%)	2(17%)
MD preference	4(16%)	1(5%)	1(7%)	4(14%)	0
Restenosis	1(4%)	0	2(14%)	4(14%)	5(42%)*

*p<0.01

Conclusion: In pts undergoing CAB for SVD, there has been a shift in indication. Fewer pts currently undergo CAB because of anatomy unsuitable for PTCA or failed PTCA; significantly more pts undergo CAB because of recurrent restenosis. New strategies to decrease restenosis should decrease need for CAB for SVD.

SURGICAL AORTIC VALVULOPLASTY AND DECALCIFICATION USING THE CAVITRON ULTRASONIC SURGICAL ASPIRATOR: LONG-TERM HEMODYNAMIC AND ANGIOGRAPHIC FOLLOWUP.

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Valve repair in patients (pts) with calcific aortic stenosis may result in marked hemodynamic improvement while avoiding problems inherent to prosthetic valves. Invasive followup data have not previously been reported in pts undergoing aortic valve debridement using the Cavitron Ultrasonic Surgical Aspirator (CUSA). Ten pts (9 male, mean age 70) underwent surgical valvuloplasty and CUSA debridement of valve leaflet calcium. Invasive hemodynamics were evaluated before and at 8.0 ± 2.5 months following the procedure.

RESULTS	PRE-CUSA	FOLLOWUP	p
AVA (cm^2)	0.75 ± 0.2	1.1 ± 0.3	0.009
Mean Gradient (mmHg)	54 ± 21	27 ± 21	0.02
C.O. (L/min)	4.9 ± 0.8	4.7 ± 0.7	NS
Ejection Fraction (%)	52 ± 14	50 ± 12	NS
LVESV (ml)	70 ± 37	72 ± 36	NS
LVEDP (mmHg)	18 ± 6	19 ± 8	NS

Despite the improvement in the aortic valve area and gradient observed, five pts had a 1 grade worsening of aortic insufficiency at followup catheterization.

We conclude that aortic valve repair using CUSA debridement results in significant long-term hemodynamic improvement in aortic stenosis. However, at followup, worsening aortic insufficiency is a frequent result and will likely limit its widespread application.