BACKGROUND: The surgical repair of aortic coarctation in infants has evolved over time, largely in response to high rates of residual or recurrent coarctation. This review evaluates our current approach utilizing extended end-to-end anastomosis without prosthetic material to enhance all areas of aortic arch hypoplasia.

Methods: The Michigan Congenital Heart Center surgical database was reviewed for infants who underwent isolated repair of aortic coarctation from January 1, 1990 to January 1, 2000. Patients who underwent simultaneous repair of other lesions and those with significant associated lesions were excluded.

Results: Eighty-three infants underwent surgical repair of isolated coarctation during this decade. Median age at repair was 21 days (range 3-363 days). Repair was performed for fusiform aneurysm in 72 patients while the remaining 11 underwent median sternotomy with circulatory arrest because of severe transverse arch hypoplasia. There were two deaths: one due to pulmonary hypertension in a patient with alveolar capillary dysplasia and one late death of pneumonia in a patient with non-cardiac anomalies. Neither had residual coarctation. Technique related complications of bronchial compression, chylothorax, and vocal cord paralysis were noted in 4 patients. At discharge, 14 patients had a gradient ≤ 15 mmHg by both physical exam and echocardiogram. Follow-up data were available for 65 patients (78%) with mean follow-up duration 4.3 years (SD ± 1.1 years). Reintervention was required in 3 patients (6%). One underwent reoperation after 1 month, and 3 underwent balloon angioplasty within 7 months of initial repair. The remaining 60 patients are asymptomatic; and no anti-hypertensive medications, and have aortic arch gradients <15 mmHg. In 2 patients, subacute stenosis necessitating resection.

Conclusion: Tailored surgical repair for aortic coarctation has a low rate (6%) of residual and recurrent coarctation even when performed in infants. Mortality and morbidity are low. Thus far, this low recurrence rate approaches that reported with other techniques in older children.

609-159 Pulmonary Position Cryopreserved Homografts: Durability in Ross and Non-Ross Patients

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Actuarial 5 year survival rates for right ventricle to pulmonary artery (RV-PA) homografts are reported to range between 49% and 81%. It is not known whether there is a difference in homograft durability when utilized for right ventricular outflow tract (RVOT) disease or for the Ross operation for pulmonary autograft replacement of the aortic valve.

To evaluate outcome and risk factors for implant failure in patients who have undergone pulmonary homograft placement for RVOT obstruction or the Ross operation, the records of all patients receiving a RV-PA homograft at this institution from January 1, 1990 to January 1, 2001 were reviewed. 148 consecutive patients were included in the study (65 Ross and 83 RVOT repairs). Adequate data was available on 136 (92%). The median follow-up time was 3.8 yrs (1mo-11yrs). Right ventricular homograft survival after Ross and non-Ross operations at finals was 85% and 88% respectively (p=0.03)

Potential risk factors for homograft failure analyzed: age at operation, diagnosis, type of surgery, homograft type (aortic vs. pulmonary) and width of homograft (mm). On univariate analysis: young age, male gender, and non-Ross operation were risk factors for homograft failure (p < 0.01)

Multivariate analysis: smaller homograft width was the single predictor of graft failure (p < 0.01). Outcomes were compared for 3 age groups: 0-10 years (n=99), homograft failure rates were 35%, 25% and 5% for the groups respectively.

For non-Ross patients, failure rates were: 43%, 15% and 12% respectively and for Ross patients; 12.5%, 5% and 0%.

Conclusions: 1. Ross patients had significantly longer homograft survival than RVOT disease patients. 2. Smaller homografts placed in younger patients required earlier intervention. 3. Pulmonary position homografts inserted in Ross patients at young ages (<10 yrs) lasted longer than similar aged non-Ross patients; whereas patients older than 10 yrs at the time of operation had similar failure rates.