1142-100 **CardioSEAL Device Closure of Multiple Atrial Septal Defects With and Without Atrial Septal Aneurysm**

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Background: Patients with atrial septal defects (ASDs) occasionally have multiple defects that may be associated with atrial septal aneurysm (ASA). The purpose of this study was to evaluate the efficacy of CardioSEAL device closure of multiple ASDs. ***Methods:*** Patients who underwent attempted closure of multiple ASDs using the CardioSEAL and CardioSEAL STARFlex devices as part of a prospective, multicenter trial were included in the study. Defect number and diameter, atrial septal length, device size, and residual leak size were obtained from angiograms and echocardiograms. ***Results:*** Device closure was attempted in 18 patients with multiple ASDs including 7 with ASA. Attempt was made to close all defects and incorporate the ASA within a single device placed through the largest defect. Median stretched diameter of the largest defect was 14 mm (range 5-25 mm), median device size:stretched diameter ratio was 2.3 (1.6-5.6), and device size:total septal length ratio was 0.8 (0.5-1). CardioSEAL (n=4) and STARFlex (n=15) devices were implanted in 17/18 (94%). Closure was unsuccessful in one (6%). Two patients required placement of 2 devices in remote defects. After device release, 13/17 (76%) had a residual leak by color Doppler. Follow-up (median 6mo, range 1-7mo) of 11/13 with initial leak showed complete occlusion or trivial residual leak (≤2 mm) in 10/11 (91%) and a persistent 4 mm leak in 1/11 (9%).
Conclusions: CardioSEAL closure of multiple ASDs with and without ASA is possible using a single device delivered through the largest defect. Devices should be large enough to cover all defects and the ASA. Most residual leaks at short-term follow-up are trivial. Further evaluation of device closure in this subgroup is warranted.

1142-101 **The Role of Transcatheter Therapy for Treatment of Pulmonary Vein Stenosis: Acute and Long-Term Results**

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Background: Pulmonary vein stenosis (PVS) may occur as a primary disease or following surgical repair of congenital heart disease (CHD). Both types carry a poor prognosis. Limited reports describe acute and short-term results of transcatheter therapies (TT) including balloon angioplasty (BA) and/or intravascular stent implant (SI) for PVS. Long-term follow-up (F/U) reports are not available. We report our acute and F/U experience involving TT for pts with PVS.
Methods: This was a retrospective review of all pts who underwent BA or SI for PVS at our institution. Pt records and cardiac catheterization reports were reviewed, including angiographic and hemodynamic data.
Results: A total of 33 pts underwent TT for PVS from 1/1980-7/2001. Pts were grouped according to initial TT procedure. Twenty-six pts (median age 1.5 yrs, range 1day-17 yrs) underwent 45 BA procedures (BA group) and 12 pt (median age 1.3 yrs, range 0.5-15 yrs) underwent placement of 21 stents (SI group). Acute results showed significant increase in vessel diameter (VD) and drop in pressure gradient (PG) across stenosis for both groups ($p<0.001$) with the greatest improvement following SI (VD pre SI: 2.6±1.3 mm vs post SI: 6.6±2.5 mm; PG pre SI: 14.8±6.8 mmHg vs post SI: 4.1±3.0 mmHg). Median F/U was 9 month (range 1 day - 10.3 yrs). Repeat catheterization was performed on 16 pts (10 post BA; 6 post SI). VD was smaller ($p<0.05$) at F/U when compared to initial results for both groups, PG was higher ($p<0.05$) for BA group but unchanged in SI pts. Transcatheter re-intervention was performed on 7/10 BA pts and 2/6 SI pts. Overall complications in the cath lab included stent embolization in 2 pts. There were no deaths in the lab or significant vascular injuries. At F/U 15 pts had died. Of these, 9/15 were ≤ 1yr of age, 12/15 had bilateral PVS and 7/15 were <48 hrs post surgical re-intervention.
Conclusion: Immediate results of BA or SI for pts with PVS are excellent with SI being superior to BA. However, recurrent stenosis or progression of the disease occurs following either procedure. Transcatheter re-intervention is often possible and seems to be less risky than surgical re-intervention. Prognosis is especially grim in pts < 1 yr of age and in pts with bilateral PVS.

1142-102 **Cost Effectiveness of Coarctation Strategies: Endovascular Stent versus Surgery**

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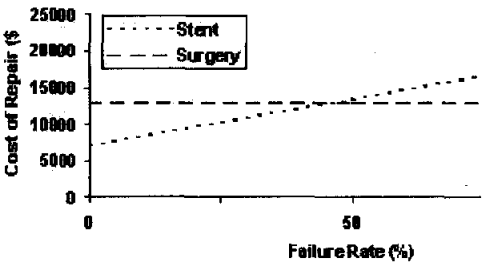
Background: Endovascular stent (ST) placement is now a new therapeutic option for coarctation of the aorta (CoA) in a subset of pts. The cost effectiveness of ST placement for CoA is compared to standard surgical repair (SU). **Methods:** From 1/97 to 12/00, inflation-adjusted hospital costs for both procedures were obtained by the HBOC Cost Accounting System software and evaluated on all pts ≥ 3 yrs of age that underwent elective repair of CoA. Continuous variables are reported as mean ± SD and analysis was performed by ANOVA. **Results:** The ST group (N=6) had an average age of 13.3±1.8 yrs compared to 8.4±4.2 yrs in the SU group (N=7;p=0.02). Successful repair was accomplished in 5 ST cases and in all SU cases. The ST group had one failure due to inability to pass the CoA (failure rate=14.3%). All pts in the ST group were discharged within 1 day while the SU length of stay was 3.6 ± 0.5 days (range 3-4 days). The mean total inflation-adjusted cost (US$) of the ST group was 6952±1307 versus 12,790±3456 for the SU group (p=0.002). By intention to treat analysis, the cost of repair with the ST first strategy was $8781 given a 14.3 % failure rate which remains significantly lower than the SU only strategy (p=0.04). Sensitivity analysis on the ST failure rate (graph) demonstrates that the cost of repair is lower with the ST first strategy compared to the SU only group until the failure rate of ST placement exceeds 45.6 %.
Conclusions: The repair of CoA using the ST first strategy is cost effective compared to utilizing only standard surgical repair.



POSTER SESSION

1167 Pediatric Echocardiography and MRI

Tuesday, March 19, 2002, 9:00 a.m.-11:00 a.m.
Georgia World Congress Center, Hall G
Presentation Hour: 10:00 a.m.-11:00 a.m.

1167-97 **Stress Echocardiography Following the Arterial Switch Operation for D-Transposition of the Great Arteries**

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Background: Although the arterial switch operation (ASO) for D-transposition of the great arteries (D-TGA) has been highly successful, questions remain concerning the potential for myocardial ischemia in these patients (pts). The appropriate test to detect ischemia in ASO pts has not been established. Thallium scans often show non-clinical perfusion abnormalities. Stress echocardiography (SE) is commonly used to detect ischemia in adults but there is limited experience in ASO pts. We sought to determine outcome and the feasibility of performing SE in pediatric pts following ASO. **Methods:** All single stage ASO pts greater than 6 yrs of age were eligible. A treadmill exercise test was performed using the Bruce protocol. The SE protocol consisted of parasternal and apical views at rest and immediately following peak exercise. Wall motion was jointly interpreted by an adult and pediatric echocardiographer. Heart rate and endurance were compared to 32 age matched historical controls with no underlying heart disease. **Results:** SE was successfully completed in 23 of 25 pts (92%) post ASO repairs. The mean age was 9.4 yrs (range 6.8-15 yrs). The resting ECG was normal in 23 of 25 pts. The mean peak heart rate achieved was significantly lower in the ASO pts compared with the control group (164 vs 189 P<.01). Exercise endurance was normal for age in 22 of 23 pts (92%). There was no ECG evidence of ischemia or arrhythmias during the test. Diagnostically adequate SE images were obtained in all pts. Resting wall motion was normal in 22 of 23 pts (96%). One pt had evidence of a septal hypokinesis on rest and stress images. The remaining pts had normal echocardiographic augmentation of all left ventricular segments and no evidence of exercise induced ischemia. There have been no cardiac events during a mean follow up of 5 months. **Conclusion:** This study demonstrates: (1) feasibility of SE in children, (2) normal endurance and no provokable wall motion abnormalities in this small cohort of pts, and (3) mild chronotropic incompetence following the ASO. Longer follow up is required to determine the sensitivity of SE for detection of ischemia and the significance of the lower peak heart rate achieved post ASO.

1167-98 **Prospective Echo Diagnosis and Surgical Repair of Anomalous Origin of a Coronary Artery From the Opposite Sinus With an Interarterial Course**

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Background: Anomalous origin of a coronary artery from the opposite sinus with an interarterial course between the great arteries (AOCA) is associated with myocardial ischemia and sudden cardiac death.
Methods/Results: From 9/97-8/01, 8 pts were identified with AOCA at Children's Hospital of Wisconsin; all were children/adolescents (age range 1 mo-20 yrs; wt range 4.7-72 kg) and 7 were diagnosed prospectively by transthoracic echo (TTE). Symptoms of cardiac ischemia initiated investigation in 4/8 pts at a mean age of 16±2.8 yrs (2 exercise-induced syncope, 1 sudden death, 1 myocardial infarction); the other 4 had an echo for suspected congenital heart disease (2 VSD; 1 bicuspid Ao valve; 1 innocent murmur). The left coronary (LCA) originated from the right sinus in 6 and the right coronary originated from the left sinus in 2 pts; all symptomatic pts had an anomalous LCA. An intramural course of the AOCA within the anterior aortic wall was found in 7/8 pts and was reliably identified by TTE using color Doppler; the other pt had an intramyocardial course of the anomalous coronary. Surgical repair was performed in 6/8 pts at a mean age of 15±3 yrs: the 2 youngest children in the series (now age 4 and 6 yrs) are asymptomatic and have not yet had surgery. Unroofing of the intramural portion of the AOCA to relocate the ostia in the appropriate sinus was successfully performed in 5 pts with resuspension of the affected coronary cusp after unroofing; no bypass grafting was required. The 1 pt with an intramyocardial course underwent patch augmentation of the AOCA at its anom-