Early LVEF recovery as indicated by a gain >10% between post- (day 7) and pre-operative values was documented in 50/136 post-operative survivors. Multivariate analysis showed that pre-operative CTR<0.50 (p=0.006) and the mean gradient (p=0.045), were independent predictors of early LVSD reversibility. During a mean follow-up (FU) time of 4,63±5 yrs, 50 (36%) pts died, 70% from non-cardiac cause. In multivariate analysis 3 independent predictors of postoperative mortality were found: diabetes (p=0.003), age ≥75 yrs (p=0.001) and the absence of early LVEF recovery (p=0.01). Additionally, the postoperative functional benefit was significantly greater in pts with LVEF recovery. Conclusion: Despite a relatively high but acceptable peri-operative mortality rate, the benefit of AVR in AS with severe LVSD is clearly important. Early post-operative LVEF recovery is associated with significantly better outcome regarding both symptoms and survival.

**T125-137 Progression of Ascending Aortic Dilatation in Congenital Bicuspid Aortic Valve Patients: Assessment by Serial Magnetic Resonance Imaging**

Benjamin Atkeson, Gian Novara, Michael Lieber, Richard Grimm, Brian Griffin, Richard D White, Cleveland Clinic Foundation, Cleveland, OH

**Introduction** – Congenital bicuspid aortic valve (BAV) patients have an associated aortopathy, with ascending aortic dilatation and increased risk of dissection. Data is limited regarding the rates of dilatation in these patients.

**Methods** – We identified consecutive adult patients with a diagnosis of BAV, who underwent serial magnetic resonance imaging (MRI) of the aorta, at least 12 months apart. Patients with prior aortic valve surgery were excluded. Demographic and echocardiographic findings regarding beta blocker use was obtained by chart review. Aortic measurements were made at the level of the sinuses and mid-ascending aorta.

**Results** – 66 BAV patients were identified (80% male; mean age 53 yrs). Mean follow-up was 32 months (range 12-96). The mean annualized increase in aortic diameter at the sinuses was 8 mm/yr. Those with aortic regurgitation showed increased rates of dilatation compared to those with normal and stenotic BAV (p<0.05). No association was noted between beta blocker use and rates of dilatation.

**Conclusions** – BAV patients have aortic dilatation, irrespective of valve dysfunction. In this cohort BAV patients assessed by MRI, the average rates of ascending aortic dilatation was 0.8 mm/yr at the level of the sinuses, which is similar to prior reports. Those with aortic regurgitation appear to have greater rates of progression, and may require closer serial follow-up.

**T125-118 N-Terminal Pro-Braintype Natriuretic Peptide in Patients With Aortic Valve Disease: Correlation to Surgical Result**

Michael W. Weber, Roman Arnold, Matthias Rau, Christian Maikowski, Eva Keil, Roland Brandt, Vesselin Mitrovic, Christian Hamm, Kerckhoff Heart Center, Bad Nauheim, Germany

**Background** – The neuropehormon NT-proBNP is secreted from the myocardium in response to an increased left ventricular wall stress. As we have shown previously, NT-proBNP is elevated in patients with aortic valve disease closely linked to disease severity and clinical symptoms.

**Hypothesis** – Since NT-proBNP is elevated in patients with aortic stenosis (AS) and aortic regurgitation (AR), we hypothesized that NT-proBNP decreases after successful aortic valve replacement (AVR) but not in conservatively treated patients.

**Methods** – 92 patients (55 male; aged 67±11 years; EF=45%) with AS, AR or prior AVR were included in this study. Clinical symptoms, NT-proBNP and transesophageal pressure gradient (PG mean) were assessed at baseline and at follow up (8±6 months). Values are given as mean±SD or SEM.

**Results** – AS was present in 64 patients (37 male, aged 69±11 years), AR in 17 patients (10 male, aged 60±11 years), prior AVR in 11 patients (8 male, aged 67±7 years), 48 patients (40 AS, 8 AR) were surgically treated (obtained AVR) and 44 patients (11 after prior AVR, 9 AR and 24 AS) were treated conservatively. NT-proBNP decreased significantly in surgically treated patients with AS (3112±648 pg/ml to 845±175 pg/ml; p<0.01) and patients with AR (1057±861 pg/ml to 497±137 pg/ml; p<0.01). There was no change in NT-proBNP in conservatively treated patients with AS (885±393 pg/ml to 808±256 pg/ml; ns), with AR (from 221±45 pg/ml to 484±276 pg/ml; ns) and in patients after prior AVR (from 464±117 pg/ml to 745±226 pg/ml; ns). In patients with an improvement in clinical symptoms (n=47) (at least one NYHA class) NT-proBNP decreased (2710±697 pg/ml to 917±78 pg/ml; p<0.01) whereas in patients with unchanged symptoms (n=25) NT-proBNP levels did not change (574±132 pg/ml to 515±104 pg/ml; ns). In patients with a worsening of clinical symptoms (n=15) NT-proBNP showed a tendency towards an increase (478±163 pg/ml to 673±224 pg/ml; ns).

**Conclusions** – NT-proBNP is elevated in patients with aortic valve disease (AS and AR) and decreases remarkably after successful surgical treatment closely linked to an improvement in clinical symptoms. This underlines the usefulness of NT-proBNP as a biochemical marker for the evaluation and monitoring of disease progression.

**T125-139 Populations Benefiting From the Ross Procedure: A Long-Term Follow-Up**

Pablo Stutebach, Santiago Lynch, Pablo Roura, Alejandro Machain, Roberto R. Favaloro, Institute of Cardiology and Cardiovascular Surgery of the Favaloro Foundation, Buenos Aires, Argentina

**Background** – The Ross procedure (RP) is a surgical alternative to mechanical prostheses or bioprostheses for the treatment of aortic valve disease. However, not all patients benefit from RP. The purpose of this study was to analyze the results at 90 months in patients undergoing RP and to determine what populations were the most benefited.

**Methods** – From 1995 through 2003, 125 patients (mean age 38±13 years, 99 males) underwent RP. Fifty-nine patients (47%) had severe aortic stenosis, 57 patients (46%) had significant aortic regurgitation, 4 patients (3%) had active endocarditis, and 6 (5%) patients had prot失效 dysfunctional. Eighty-two patients (65%) had bicuspid aortic valve. Pulmonary autograft and pulmonary homograft dysfunction was defined as ≥4x1 regur-
gitation or peak gradient ≥20 mmHg as registered by Doppler echocardiography.

**Results** – Hospital mortality was 3.2% (4 patients); Survival at 90 months was 96±1.8%. Freedom from rejection was 95.4±2.7%; from autograft explant, 97%±2.7%; from pul-
monary homograft explant, 99±1.3%; from autograft dysfunction, 87%±3.6%; from pul-
monary homograft dysfunction, 73±2.9%; from endocarditis, 99±1.1%; and from thrombosis and bleeding, 100%. Patients with aortic valve regurgitation had a higher tendency toward autograft dysfunction than patients with aortic stenosis (78±8% versus 100%, P=0.004). Patients with age <30 years had a higher tendency toward pulmo-

nary homograft dysfunction than patients with age >30 years (69±10% vs 90±5%, P<0.01). On multivariate analysis (Cox test) no variables associated with mortality and reop-
eration. However, previous aortic regurgitation associated with autograft dysfunction (OR 5.4, 95% CI 1.21-24.8, P=0.027), and age <30 years (OR 0.9, 95% CI 0.86-0.95, P=0.01), with homograft dysfunction.

**Conclusions** – RP constitutes an alternative for patients with aortic valve stenosis and age >30 years, since they present with a low rate of events at 90 months.

**T125-140 Creases and Folds: Why Does the Bicuspid Aortic Valve Fail So Early?**

Francis Bobecki, Mano J. Thubrikar, Joseph W. Cook, Mark K. Reames, Sr., Brett L. Fowler, Carolinas Heart Institute at Carolinas Medical Center, Charlotte, NC, Heineman Medical Research Laboratories, Carolinas Medical Center, Charlotte, NC

**Background** – Congenitally bicuspid aortic valves (CAV) are the leading cause of clinically manifest aortic valve disease in patients below the age of 50. The reason why CAV’s fail, however, has not been determined.

**Methods** – The subject has been investigated in vitro experiments as well as in computer-
digital simulation studies. Aortic root grids were constructed and stress was measured simulating function. The results of the experiments were compared to those we have obtained in previous studies on the normal tricuspid aortic valve.

**Results** – The principal findings are as follows:

1. All congenitally bicuspid aortic roots are morphologically significantly stenotic even in absence of clinical symptoms and measurable pressure gradients.

2. Congenitally bicuspid aortic valves show significant degree of creasing and folding even when fully expanded. This phenomenon further increases dur-
ing function.

3. Contrary to the normal, trileaflet aortic valve, the folding of the leaflet edges of the CAV is maximal in diastole, thus the diastolic pressure load exerted upon it is multiple of the normal.

**Conclusions** – The above phenomenon induces a significant stress overload, which undoubtedly contributes to the early failure rate of CAV’s.