Reintervention Rate and Aortic Valve replacement in Critical Aortic Stenosis: Comparison of Patients who Underwent Primary Surgical or Balloon Valvuloplasty

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Introduction: Surgical and catheter intervention can be undertaken with initial success in patients with critical aortic stenosis (CAS). The majority require further interventions, long-term outcome and follow up remains uncertain.

Methods and Results: Over 40 years (1970-2010) 96 patients required intervention for neonatal (<30 days) CAS. Surgery (SX) was undertaken in 61 patients and balloon dilation (BD) in 35 patients. Before 2000, SX was more common (56/63 cases) while BD was favoured after 2000 (28/33 cases). There were 29 (32.9%) reported deaths. Twenty (22.7%) patients died without any further intervention, one patient had a heart transplant and another had a single ventricle palliation. Overall survival rate at 1, 5, 10, 15 and 20 years was 73%, 71%, 71%, 66%, and 66% respectively. Survival rates were better for BD patients (survival 5-20 years was 87.2% versus SX 5,10,15 & 20 yr survival rates 62, 62, 57 & 57, P= 0.009). Among the 57 survivors, 52 (87%) had at least one reintervention. SX 1,5,10,15 &20 year freedom from reintervention was 65%, 51%, 39%, 33% & 30% versus BD 1,5,10 & 15 yr freedom from reintervention was 49%, 46%, 30% & 11% (P= 0.01). Further reintervention was required in 21(36.8%). There were 33 aortic valve replacements (AVR) in 32 patients, 31(35.2%) had a Ross or Ross-Konno procedure. Freedom from AVR at 5, 10 and 20 years was 78%, 63%, and 44%. The median time interval between initial procedure and AVR for the BD group was 1.32 years (mean 3.9 ± 4.7, range 1 day-14.4 years) this was shorter than for the SX patient group, 8.9years (mean 7.24±5.1, range 1 day-16.5years). For patients presenting for initial procedure since 2000, AVR was undertaken in 14/34, with a median time to AVR of 1.3yrs.

Conclusions: This study highlights the need for repeat intervention on the aortic valve and the acute and long-term mortality associated with CAS. Catheter based intervention has become more common but is still associated with early mortality. Reintervention is highly likely in survivors, over 50% of survivors requiring surgical AVR, and a trend towards earlier surgical AVR at our institution in recent years.