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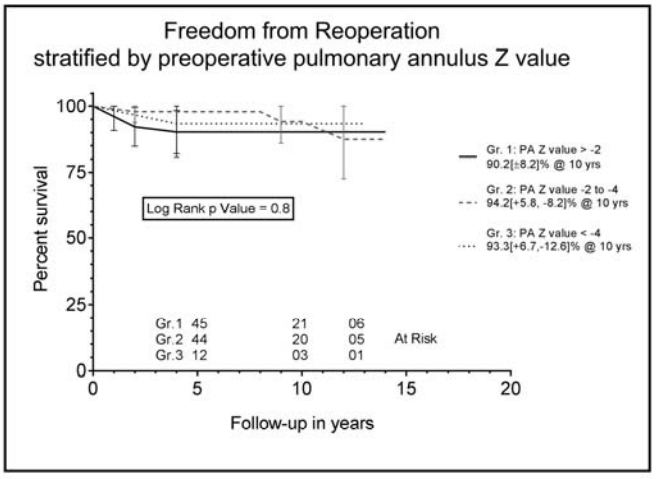
Influence of Echo derived Preoperative Pulmonary Annulus Z value on late outcome of TOF: Outcome of 123 consecutive TOF repairs followed up for 959 patient years

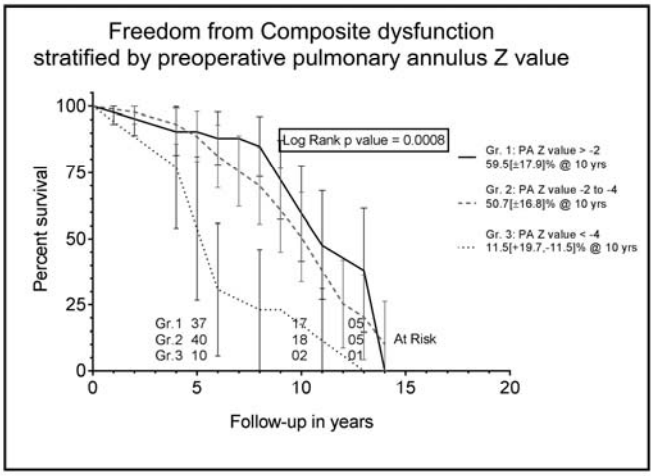
Erdil T., Christmann M., Rampa J., Balmer C., Valsangiacomo E., Schweiger M., Pretre R., Hübler M., Dave H.
Children's Research Centre and Children's Heart Centre, University Children's Hospital Zürich, Switzerland.

Introduction: Long-term outcome of TOF depends on the size and function of the pulmonary Valve. This study analyzes the impact of preoperative pulmonary Z Score on the long-term outcome of TOF.

Methods: A cohort of 123 consecutive TOF repairs (2004-2014) were divided into Group I [Z > -2] 52; Group II [Z -2 to -4] 54, Group III [Z < -4]17 patients, based on preoperative pulmonary annulus(PA) Z Score. One primary repair using Contegra was excluded from the study. Median age and weight were 161(6-593)days and 5.8(3-8.9)kg respectively. Non-Transannular technique was used in 41(33.3%) patients (Group I:21; Group II:17, Group III:3); Trans-annular technique was used in 82 (66.7%) patients (Group I:31; Group II:37, Group III:14), thus resulting in trans-annular repair in 59.6% of Group I; 68.5% of Group II and 82.4% of Group III patients. Composite pulmonary valve dysfunction was defined as peak gradient > 40 mm Hg and/or pulmonary regurgitation ≥ moderate at follow-up.

Results: All patients were alive at a median of nine(4-14) years of follow-up. 21(17%) patients needed catheter intervention: mostly for branch PA stenosis or for Melody valve insertion. 11(9%) needed reoperations, including for pulmonary valve insertion, tricuspid valve repair and side branch stenosis. A total of 10(8%)patients needed pulmonary bio-prosthesis either surgically (7) or trans-catheterly (3). At last follow-up, freedom from composite pulmonary dysfunction was 59.5±17.9%, 50.5±16.8% and 11.5[+19.6, -11.5]% @ 10 years for Groups I-III respectively (p=0.0008). Freedom from replacement was not significantly different between groups (p=0.8) [Fig. 1]. Freedom from catheter reintervention was 88.6±9.9%, 81.8±13.1% and 88.2[+11.8, -15.3]% @10 years respectively (p=0.5).





Conclusions: While the limits of valve sparing approaches are being pushed, we have followed a middle path of relieving obstruction while also achieving pulmonary valve competence. This strategy has yielded excellent freedom from replacement as well as reintervention in the most disadvantaged group with Z > -4. The low freedom from composite dysfunction in Group III suggests the work pending before us to device methods to improve composite function in the long-term.