

Neonatal management of critical aortic stenosis after in-utero valvuloplasty: role of Ross-Konno operation

*Tulzer G. (1), Arzt W.(2), Gitter R.(1), Sames E.(2), Wertaschnigg D.(2), Veit I.(2), Mair R.(1)
Children's Heart Center Linz, Linz, Austria (1)
Institute of Prenatal Medicine, Children and Women's Hospital Linz, Linz, Austria (2)*

Neonates with critical aortic stenosis (AS) after in-utero valvuloplasty usually present with borderline left ventricular size, function and varying degrees of endocardial fibroelastosis. The decision towards a biventricular circulation remains a challenge. The purpose of this study was to investigate the role of an early Ross-Konno (RK) operation on a biventricular outcome.

Between 12/2001 and 1 / 2012 we attempted 38 fetal aortic valvuloplasties in 35 fetuses (median GA 26+4 weeks; 21+4 to 32+1), 5 of these with advanced end stage heart failure and hydrops. The procedure was successful in 27/35 fetuses (77%), there were 3 IUDs in this group, so 24 children were live-born in 9 different centers in Austria, Germany, Poland, Denmark and Italy. According to the respective criteria of these centers, 18/24 (75%) newborns were managed towards a biventricular circulation either with aortic balloon dilation alone or followed by a RK operation.

Balloon dilation alone was effective as a first line therapy in only 5/18 newborns, two of them needed later a RK operation at 1 and 4 years respectively, 3 patients died due to left heart failure and 2 had to go on to a Norwood procedure with 1 death. The remaining 8 patients underwent a neonatal RK at a median age of 14 days (7-19 days). One child died 37 days after successful surgery due to NEC. At a median follow-up of 2,3 years (0,3-6,8 years) all children are biventricular, with sufficient LV function and normal pulmonary artery pressures. Children born in centers offering neonatal RK surgery had higher probability to achieve a biventricular circulation, than children born in centers without this option: 10/16 (62,5%) vs 2/8 (25%)

Conclusions: In neonates with critical AS born after successful in-utero valvuloplasty and non-effective post-partum aortic valvuloplasty, early aortic valve replacement with a RK operation appears to be effective in improving LV function and increasing the chance for a biventricular circulation.