Mid- to long term follow-up of coronary artery bypass grafting in children – a single centre experience

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Background: Literature about coronary artery bypass grafting (CABG) of children and young adults is rare.

Methods: This is a 20 year-single centre retrospective observational analysis of all pediatric patients (pts) who underwent one or more CABG less than 18 years old. We reviewed diagnosis, therapy, long term surgical results and outcome.

Results: 16 pts with CABG were identified since 1992 at our centre. CABG was necessary after surgeries due to CHD (n=10), coronary artery malformation (n=3) and stenosis subsequent to Kawasaki disease (KD) (n=3) at a median age of 4.8 (0.04-16.75) years. The left internal mammary artery (LIMA) was used in 8 pts; the right internal mammary artery (RIMA) in 2. 1 pt with RIMA graft needed reactivation with a saphenous vein after graft closure. A venous graft was used in 3 pts. One pt with KD received LIMA, RIMA, and a venous graft. In 2 pts the bypass type was not mentioned in their surgery report. After surgery all pts received continued oral anticoagulation.

Median follow-up was 9.8 (2.8-22.3) years. Four pts were NYHA class II-III in their last follow-up. In these four pts angiography showed graft closure with collateral formation (n=1, after Ross procedure), stenosis (n=1, after Ross procedure), graft closure due to/with normal antegrade coronary artery perfusion (n=1, after arterial switch), normal perfusion (n=1, after arterial Switch). Magnetic resonance imaging (MRI) revealed no sign of ischemia in 3 of them, one pt with graft closure showed perfusion defects. The remaining 9 pts are doing well with no restriction to their daily lives and activities. MRI scan demonstrated small myocardial perfusion defects in 3 of them, in 2 no MRI scan was performed.

Conclusion: Despite small vessels,narrow anastomotic sites at implantation, and pts growth, CABG using arterial grafts (LIMA/RIMA) show good overall mid- to long term results in children in typical lesions as after cardiovascular surgery, Kawasaki disease and coronary malformation. Venous grafts have a lower patency rate.