

Long-term Follow up after the Norwood procedure

*Sames-Dolzer E., Gierlinger G., Kreuzer M., Schrempf J., Benedikt P., Tulzer G., Mair R.
Kinderherz-Zentrum Linz, Linz, Austria*

Objectives: Changes in operative techniques have brought significant improvement of early postoperative results after the Norwood procedure. This study is meant to examine long-term follow up concerning mortality and morbidity after the Norwood procedure regarding several treatment methods.

Methods: A single center retrospective study was done using data from the center's database. 317 consecutive patients who underwent a Norwood procedure between 1997 and 2014 were included. Patients were followed until september 2015 and the following parameters were analysed for the 3 stages of palliation: mortality, interstage interventions and longterm morbidity during the Fontan circulation.

Results: The mortality rate until the BDG was 18.9% (30 days mortality 13.2% and late interstage mortality 5.7%). The patient group with right sided RV-PA conduit (181 patients) showed the best results with 30 days mortality of 7.8% and late mortality of 4.4% compared to patients with modified BT-Shunt or left sided RV-PA conduit. The BDG operation was done in 254 patients at a median age of 121 days. 30 days mortality was 2%. Mortality in the interstage II was 10.2% with median age at death of 328 days and chronic cardiac failure in 65% of cases; 1 HTX. Extracardiac Fontan operation was done in 176 patients (86% fenestrated) at a median age of 3.44 a with a 30 days mortality of 0.6%. During the follow up between 10m – 17,5a 5 patients died late after Fontan, 2 HTX. 6.3% of the Fontan patients showed PLE, 2.8% plastic bronchitis, 6,8% thrombi during follow up. Additional reoperations were necessary in 11.04% during interstage I, 3.5% during interstage II and 7.4% in Stage III. Interventions took place in 7.89% of pat. during interstage I, in 15.35% in interstage II and in 10.23% of Fontan patients.

Conclusions: Survival rates improved significantly during the observation period favouring the group with right sided RV-PA conduit showing a 5 years survival expectancy of 78.1% (95%-CI: 71.8-85.0%). Mortality rate is highest in stage I, still remarkable in stage II, but low in Stage III. The summarized reoperation and reintervention rate apart from the 3 stage palliation remains high.