

The Nikaidoh Procedure (Aortic Root Translocation): Early and Midterm Outcomes

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Introduction:

For patients presenting with transposition of the great arteries (TGA), ventricular septal defect (VSD), and pulmonary stenosis (PS), aortic translocation or the Nikaidoh procedure has been shown to be a valuable surgical option. Despite promising early results, reports on surgical outcomes and follow-up are scarce. Herein, we report our early- and follow-up results after the Nikaidoh procedure.

Methods:

Demographic, procedural, and outcome data were retrospectively collected for 11 consecutive patients who underwent the Nikaidoh procedure between 2007 and 2018 at our institution. The postoperative clinical course and need for reinterventions were reviewed, as well as echocardiograms of 9 patients.

Results:

The main diagnosis was TGA/VSD/PS (n=10). Median age at operation was 7 months (range 2-36 months). The aortic root was transplanted as a free autograft followed by coronary reimplantation. Right ventricle to pulmonary artery (RV-PA) continuity was established with a valve in 5 patients (45%), and valveless in 6 patients (55%). All patients survived the operation (median ICU stay 7 days), and follow-up period (median 6.2 years, range 0.7-11.6 years). All patients show good functional capacity (NYHA class I-II). Reinterventions were performed in 5 patients. Freedom from re-intervention on the RV-PA connection was highest in patients with a valveless RV-PA connection (p = 0.046). No reinterventions were performed on the left ventricular (LV) outflow tract. Echocardiography demonstrated unrestricted flow across the LV outflow tract and no significant aortic insufficiency. When compared to pre-operatively, normalization of LV dimensions and function was observed postoperatively and at latest follow-up: LV end-diastolic dimension (mean z-scores: -3.4, 0.9 and -0.8 at the 3 time points, respectively), LV end-systolic dimension (mean z-scores: -3.6, 1.4 and 0.1), and LV ejection fraction (mean 76%, 62% and 56%). RV function improved post-operatively for fractional area change (34%, 42% and 48%) and TAPSE (6.9mm, 10.5mm and 15.7mm).

Conclusions:

Aortic root translocation was performed in patients with complex TGA/VSD/PS with no mortality and without LVOT reinterventions during follow-up. Most reinterventions involved the RV-PA connection, with a trend towards fewer reinterventions in patients with a valveless RV-PA connection. Ventricular function and dimensions all normalized postoperatively and remained stable during follow-up.

