Effects of surgical truncus block rotation on the conduction system in children with transposition of the great arteries and left ventricular outflow obstruction

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INTRODUCTION: The standard surgical management of patients with transposition of the great arteries (TGA) and left ventricular outflow obstruction (LVOTO) has been the Rastelli operation. More recently, truncus block rotation (TBR), by cutting out aortic and pulmonary root in one block and by rotating it 180 degrees, has been introduced as a new option for anatomical repair.

AIM: To evaluate the effects of this surgical method on the conduction system.

METHODS: 16 consecutive patients (Median age at surgery 244 days, range: 4-2360) with TGA and LVOT were treated in our institution by TBR. Preoperative, postoperative and follow-up ECGs were reviewed for QRS duration, QRS-pattern, repolarisation and QTc. The 1st ECG was obtained at median 3.5 (1-30) days before surgery, the first ECG after surgery at median 12 (3-27) days later. The median follow up time was 585.5 (11-2572) days.

RESULTS: Except one complete AV-block, no major arrhythmias were observed during the study period. One patient had a transient atrial rhythm right after surgery, which changed to sinus rhythm during the follow up period. All patients without typical bundle branch block (BBB) pattern had a median QRS duration of 65 ms (54-112 ms) before surgery, 62 ms (54-122 ms) after surgery and 84 ms (66-128 ms) at the last follow up visit. None of the patients had a typical BBB pattern before surgery, but 8/16 pts (50%) had a right BBB after surgery, which persisted during follow up. This compares well to a comparable Rastelli cohort, where a right BBB prevalence of 77% was reported. In the BBB group the median QRS-duration was 100 ms (86-116 ms) right after surgery and 100 ms (92-128 ms) at last follow up. In 12 of 16 patients there were unspecific ST changes and negative T-waves, which persisted in the follow-up with unknown significance for the future.

CONCLUSION:
Our data suggests, that negative effects on the conduction system and arrhythmias do not play a major role in TBR. Their prevalence is comparable if not less than in patients after a Rastelli procedure. More patients and longer follow-up are needed to confirm the results of this study.