Oblique coronary transfer technique in arterial switch operation for transposition of the great arteries

Yusuke Yamamoto[1], Koji Nomura[1], Fumiaki Murayama[1], and Sho Isobe[1]

[1]Saitama Children's Medical Center

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Abstract

Background: Mortality rates after the arterial switch operation (ASO) for transposition of the great arteries (TGA) are still suboptimal mainly due to postoperative myocardial ischemia. The present study aimed to investigate the clinical impact of our modification of coronary transplantation, wherein the coronary cuffs are transplanted oblique to the pulmonary trunk to avoid torsion of the coronary arteries. Methods: From September 2010 to August 2020, all 37 consecutive patients who underwent ASO for TGA with our modification, i.e., the oblique coronary transfer technique, were retrospectively reviewed. Cardiac dimensions and patency of the coronary arteries were examined by cineangiography, and hemodynamic parameters were measured by cardiac catheterization and transthoracic echocardiography. Results: During a median 5.3 years of postoperative follow-up, there were no deaths and no patient required mechanical circulatory support. Median left ventricular ejection fraction was 68.8% (interquartile range 66.8-71.0, minimum 54.6). All patients maintained normal sinus rhythm without arrhythmia, except in the early postoperative period. Five patients underwent unplanned re-intervention for peripheral pulmonary stenosis, but none for coronary insufficiency. The 8-year freedom from re-intervention rate was 85.6%. Among a total of 110 transplanted coronary arteries, 108 (98.2%) remained patent, and two circumflex arteries were occluded much later after surgery, although with preserved ventricular function due to compensatory growth of other coronary branches. Conclusion: The oblique coronary transfer technique, which aims to avoid torsion of the coronary arteries upon transplantation, provides good patency of the coronary arteries and subsequent improvement of postoperative mortality rates following ASO.

Title

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Authors

Yusuke Yamamoto[1], Koji Nomura[1], Takahiro Tomoyasu[1], Fumiaki Murayama[1], Sho Isobe[1]

Institution

1: Department of Pediatric Cardiovascular Surgery, Saitama Children's Medical Center, Saitama, Japan

Running title

Modified coronary transfer technique

Address for correspondence

Yusuke Yamamoto, MD, PhD

Department of Pediatric Cardiovascular Surgery, Saitama Children's Medical Center, 1-2 Shintoshin, Chuou-ku, Saitama, 330-8777, Japan

Tel: +81-48-601-2200

E-mail: acamais@gmail.com

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