

Comparison of Different Pulmonary Valve Reconstruction Techniques During Transannular Repair of Tetralogy of Fallot

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Abstract

Background: Transannular patch, which results pulmonary insufficiency (PI), is usually required during repair of Tetralogy of Fallot (TOF). In this study, we compared 3 types of pulmonary valve reconstruction techniques during transannular repair of TOF. Methods: Between February 2014 and January 2018, 50 patients with TOF underwent total repair with transannular patch. These patients were divided into three groups. In group 1, (n= 15), a single gluteraldehyde treated autologous pericardial monocusp (standard method) was reconstructed. In group 2, (n= 16) Nunn's bileaflet pulmonary valve reconstruction technique was used with autologous pericardial patch. In group 3, (n= 19), Nunn's bileaflet technique was performed with expanded polytetrafluoroethylene (e-PTFE) membrane. Outcomes of the patients with early and mid-term competency of the pulmonary valves were analyzed. Results: All three pulmonary valve reconstruction techniques were significantly effective in early postoperative period. Freedom from moderate to severe PI were 73.3%; 100% and 89.4% respectively. Mortality, duration of intensive care unit and hospital stay were similar between the groups. The mean follow-up period was 17.5±13.0 (3 to 57) months. Freedom from moderate to severe PI decreased to 40%; 81.2% and 73.7% respectively at the end of the follow-up period. Presence of moderate to severe PI was significantly higher in group 1 (p: 0,018 between group 1 and 2, p: 0,048 between group 1 and grup 3). Conclusions: All three pulmonary valve reconstruction techniques provided competent pulmonary valves. Nunn's bileaflet technique had better outcome at midterm. This technique has a potential to delay right ventricular dysfunction at long-term.

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