

Tetralogy of Fallot repair: optimal z-score use for transannular patch insertion

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Abstract:

Transannular patching is used to relieve significant pulmonary annular stenosis during tetralogy of Fallot repair. Although recent literature has focused on the deleterious effects of pulmonary regurgitation, inadequate relief of stenosis may increase postoperative mortality and the re-intervention rate. Patching criteria based on pulmonary annular z-scores are ambiguous because of the use of varied z-score data sets. This study aimed to generate data that could be used to optimize z-score use for patch insertion. A retrospective review was made of medical records of patients who had a valve-sparing repair of tetralogy of Fallot between 1 January 2000 and 31 December 2010. In a selected group in which the residual gradient was confined to the pulmonary valve, the post-repair peak pressure gradient was determined by trans-thoracic echocardiography and was correlated with the intra-operative pulmonary valve annulus (PVA) diameter z-score. Regression analysis was used to examine this relationship. Data from 46 patients with valve-sparing repair were reviewed; the median age and median weight were 6.5 months and 6.6 kg, respectively; the 30-day mortality was 2.2%. Analysis of these data implies that 25% of the time, all patients with a PVA z-score of -1.3 would have a PVA gradient ≥ 30 mmHg. Criteria that recommend a transannular patch insertion only when the PVA diameter z-score is significantly smaller than -1.3 (e.g. -3) may result in a significant number of patients with an unacceptable post-repair PVA gradient.