

# Intracardiac Repair of the Tetralogy of Fallot Using Trans-right Atrial and Transpulmonary Approach: A Video Presentation

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## Abstract

### Keywords

- ▶ intracardiac repair
- ▶ tetralogy of Fallot
- ▶ transpulmonary approach
- ▶ trans-right atrial

Tetralogy of Fallot (TOF) is one of the common cyanotic heart diseases. Now total repair is increasingly being used to save children at younger age and having lower body weight. The aim of this study was to evaluate the results of the two different surgical techniques used for total repair of TOF: transatrial-transpulmonary approach and transventricular approach with special emphasis on pre- and intraoperative risk factors that affect the prognosis of patients, and with analysis of postoperative short-term results.

1. Following median sternotomy, the pericardium is incised to the right of midline and left in situ in between 4–0 silk stay sutures.
2. After aortobicaval cannulation, the fat pad between the aorta and pulmonary artery is incised for individual aortic cross-clamping and avoiding distortion of the pulmonary artery. Patent ductus arteriosus (PDA), if present, may be ligated at this stage under controlled hypotension.
3. Four stay sutures are placed proximal and distal to the pulmonary valve ring.
4. The mid portion of the pulmonary artery is incised. The aorta is cross-clamped.
5. Myocardial protection is achieved by administering injection adenosine, cold blood cardioplegia (St. Thomas II; 4:1), and topical cardiac cooling using cold saline.
6. Right atriotomy is performed 1 cm parallel to the atrioventricular groove for proper visualization of the tricuspid valve, ventricular septal defect, and infundibular os.
7. Left ventricle is vented through the interatrial septum using a DLP vent.
8. The parietal insertion of the infundibular septum is excised to relieve right ventricular outflow tract obstruction.
9. Care is taken not to excise the septal insertion of the infundibular septum to avoid injury to the first septal perforator artery.
10. A DLP vent is placed in the pulmonary artery to obtain a bloodless operative field.
11. Two stay sutures are placed on the two extremes of the anterosuperior portion of the tricuspid valve for proper visualization.
12. The final relief of the right ventricular outflow tract obstruction is achieved by a combined transpulmonary and trans-right atrial approach taking care not to injure the trabecula septomarginalis and aortic valve.
13. A circumferential muscular resection is performed around the infundibular os.
14. An appropriated-sized Hegar's dilator is inserted through the newly created infundibular os to ensure adequate relief of the right ventricular outflow tract obstruction.
15. Ventricular septal defect is closed using a Dacron patch and interrupted 5–0 pledgeted Prolene sutures taking care not to injure the atrioventricular bundle, tricuspid valve, and aortic valve.
16. The patent foramen ovale is closed directly.
17. The septal leaflet of the tricuspid valve is mobilized to avoid iatrogenic tricuspid regurgitation.
18. The tricuspid valve is checked for competence.
19. A 2- to 3-mm patent foramen ovale is created for right ventricular decompression in the event of postoperative right ventricular dysfunction.

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20. The right atrium is closed.
21. The aortic cross-clamp has been removed.
22. An appropriate-sized untreated pericardial patch is sutured over the pulmonary artery. Care is taken not to over- or undersize the pulmonary valve ring and pulmonary artery. The cusps of the pulmonary artery are retained to obtain a bicuspid configuration, thus minimizing postoperative pulmonary regurgitation (**Video 1**).

**Conflict of Interest**

None.

**Video 1**

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