Residual Ventricular Septal Defect after Surgical Repair of TOF—A Case Report

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Abstract:

Residual Ventricular septal defect after surgical repair for Tetralogy of fallot(TOF) can occasionally be heamodynamically important requiring re-intervention.Closed observation and followup make this defect heamodynamically insignificant, required no medication and no endocarditis.We describe one patient having residual defect after surgical repair of TOF.

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Introduction:

A ventricular septal defect is a consistent component of tetralogy of fallot(TOF) and is routinely closed during surgical correction of this more complex defect. Small residual defects are frequently described on postoperative transthoracic echocardiography (TTE) but the rate of possible spontaneous closure or the heamodynamic and clinical significance incase of persistent residual shunt, are sparsely documented.[1] Here we evaluated a patient of intracardiac repair of TOF with regard to residual shunt and looked at the rate of spontaneous closure in time with its eventual implications for the patient in midterm follow-up.

Case History:

A seven years old boy admitted in National Institute of Cardiovascular Diseases and Hospital(NICVD) Dhaka,with a diagnosis of tetralogy of fallot(TOF)for intracardiac repair He looked cyanosed with clubbing,120 mm of hg systolic pressure, 75beats per minute of heart rate , and 20 breaths per minutesof respiratory rate. On auscultation, revealed features suggestive of severepulmonary stenosis.Chest skiagram showed typical bootshaped heart with oligaemic lung fields, echocardiographic finding was tetralogy of Fallot with relatively small sized branch of pulmonary arteries and a 15mm subaortic ventricular septal defect(VSD)with right to left shunt.Cardiac Catheterization showed 120 mm of hg right ventricular pressure and severe infundibular & valvular stenosis with a malaligned VSD with Right to Left shunt (R—L). This patient underwent surgery for closure of malaligned VSD ,resection of infundibular muscle bands .standered surgical technique using cardiopulmonary bypass(CPB)with moderate hypothermia, cross clamping and cold blood cardioplegia were used.

Fi.-1: *Echocardiography showing Tetralogy of Fallot.*

Patch material include Polytetrafloroethiline (PTFE) and a running suture technique with a Nonabsorable suture(prolene)was employed. Exposure for VSD closure was through the right atrium.During operation VSD closure was tested and checked by vulsalva menuver by anesthetist.patient was gradually weaned off from inotrops and mechanical ventilation and was discharged from hospital after postoperative TTE procedure. A residual VSD measuring about 4 mm was detected with two dimensional echocardiographic imaging.the patient was symptom free at one month and at 3 months follow-up. At last followup the R—L shunt was heamodynamically insignificant, as documented by TTE and electrocardiogram (Neither enlargement of cardiac chambers nor signs of ventricular strain respectively) the patient required no medication and no endocarditis was noted.

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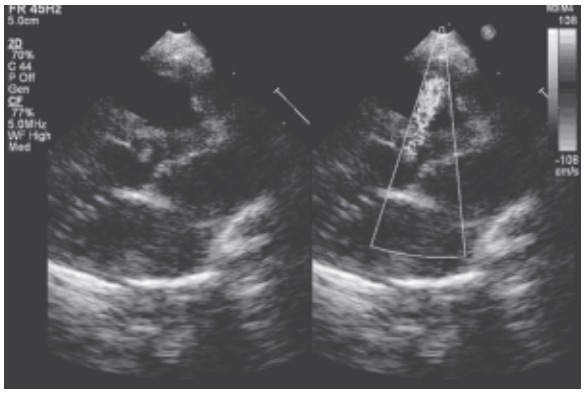

Fig.-2: *Echocardiography showing residual VSD*

Discussion:

Heamodynamically significant residual VSD following repair for TOF imposes significant morbidity, mortalityand economic burden on the family of the patient.[1] This is specially relevant in developing countries. this defects could be closed by AMVSO (Amplatzer membranous ventricular septal occluder)has been proved to be safe alternative but cost more than repeat redosurgery.The ADO (Amplatzer Duct Occluder) could be an alternative for closure of residual VSD in perimembranous region after surgical repair of tetralogy of Fallot.[1]

When a VSD is part of more complex congenital heart disease such as tetralogy of Fallot, generally they are routinely closed with surgical mortalities ranging from 1% to 5%. [2,4,5]

The focus on post-surgical history of these defects lies mere in the long term quality of life and functional status of growing children and young adult, which will be influenced by eventual residual lesions, one of which is a VSD shunt.[2]

In TOF with small residual defect at the superior aspect of the VSD patch should be followed up closely for the defect enlargement and a late significant shunt.[3]

Ali dodge khatami and collegues[2] looked 7 patients has have residual VSD (2mm in size) in 52 patients of TOF which will have remained open after median follow-up of 3.1 years (Range 0.5—9.7).

Similar to above study and findings Yang and colleagues[3] looked at the frequency and significance of residual defects in 294 patients undergoing significant closure of simple VSD and that with associated complex congenital heart disease. They detected a residual VSD in 96 of 294 patients (33%). This is slightly higher in patients with an isolated VSD (41%) as compared with that of more complex defect with VSD component (33%).

Yang and collegues recommended residual defect longer than 4 mm should undergo immediate surgical revision, and those with tetralogy of Fallot with a small residual defect at the superior aspect of the VSD patch should be followed closely for defect enlargement and late significant shunt.[3]

Residual shunt remained in our patient is in the lower aspect of the VSD patch with significant heamodynamic instability. Patient was asymptomatic, medication free and had no episodes of endocarditis at last follow-up, his quality of life was judged to normal.

Bol-Raap and collegues studied 188 consecutive patients undergoing surgical closure of an isolated VSD among the 73 Residual VSD shunt,37 disappeared spontaneously at a median time of 3.9years.[6]

Residual shunt closed spontaneously were frequently after complete repair of AVSD (Atrio-ventricular septal defect), as compared with after correction of TOF and closure of an isolated VSD.[5]

Conclusion:

Residual shunt greater than 2 mm are unlikely to close spontaneously, but are heamo- dynamically and clinically irrelevant for the patient. Even after a perfect repair of TOF lifelong endocarditis prophylaxis is indicated.

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