



GRADUAL TRANSCATHETER CLOSURE OF PATENT DUCTUS ARTERIOSUS, MULTIPLE MUSCULAR VENTRICULAR SEPTAL DEFECTS, AND ATRIAL SEPTAL DEFECT

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History and physical:

I, Female, 13 months, 6 kg, admitted to Adam Malik General Hospital, with respiratory distress, intolerance exercise, and failure to thrive. From physical examination, she presented 97 – 100% oxygen saturation in room air, respiratory rate 50 – 60 bpm, heart rate 140 – 150 bpm, bounding pulses, and continuous murmur in pulmonary area and loud S2 in tricuspid area.

Imaging:

Before procedure, Chest X-ray interpretation: Cardiomegaly with increase of pulmonary vascular markings. Electrocardiography interpretation: Sinus rhythm, normal axis, and biventricular hypertrophy (BVH). Echocardiography examination: Left-sided enlargement with small and multiple ventricular septal defects (VSD), muscular type, diameter 3 mm and 6,5 – 7 mm, atrial septal defect (ASD), secundum type, diameter 16 – 17 mm, and patent ductus arteriosus (PDA), tubular type, diameter 3 - 4 mm and length 7 – 8 mm. No aortic regurgitation and mitral regurgitation. The four defects were still left to right shunts, but we found a moderate tricuspid regurgitation, moderate pulmonary regurgitation, and dilatation of pulmonary artery. Left aortic arch and no coarctation of aorta. No vegetation and pericardial effusion. Well contractility of ventricle and no paradoxical movement. We concluded a significant multiple defects consist of moderate tubular PDA, small and moderate multiple muscular VSD, and moderate secundum ASD.

Indication for intervention:

We concluded a heart failure caused by significant left to right shunts of multiple defects (PDA, VSD, and ASD) and moderate secondary pulmonary arterial hypertension (PAH). We considered to gradual transcatheter closure of moderate PDA, moderate muscular VSD,

moderate secundum ASD, and small muscular VSD, respectively. We performed the procedures step by step based on weight at intervention, weight change during monitoring, and clinical manifestations improvement between the post-interventions.

Intervention:

The first, we performed transcatheter PDA closure with Amplatzer Duct Occluder (ADO) II No. 6-4, then six months later, we closed moderate muscular VSD with Multi-Functional Occluder (MFO) Konar No. 9-7. After one year, we performed transcatheter ASD closure with an Amplatzer Septal Occluder (ASO) No. 18. Finally, one year later, we performed transcatheter of small muscular VSD with ADO II No. 4-6.

INTERVENTION:

Body weight increased significantly since before procedure, starting from 6 kg, 8 kg before the second procedure, 10 kg before the third procedure, and 15 kg before the last procedure at the age of 4 years. Gradual closure of multiple defects via a transcatheter may be recommended in pediatric cases. Body weight, clinical manifestation, and degree of left to right shunt can be considered for priority selection of defect closure.

These are chest x-rays of our patients during monitoring.



Figure 1.:

Second chest X-ray after transcatheter



Figure 2.:

First chest X-ray before procedure
PDA closure procedure



Figure 3.:

Third chest X-ray after transcatheter VSD closure procedure



Figure 4.:

Fourth chest X-ray after transcatheter ASD closure procedure



Figure 5.:

Fifth chest X-ray after transcatheter of VSD with PDA (ADO II) procedure

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