

## Transcatheter Occlusion of Abnormal Vascular Connections with Different Devices in Children with Congenital Heart Disease: A Single-Center Experience from Turkey

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**Introduction:** Transcatheter occlusion of abnormal vascular connections can be applied with a high success rate by pediatric cardiologists and interventional radiologists. The main types of abnormal vascular connections are between the aorta or its branches and the systemic veins or heart chambers, major aorto-pulmonary collateral arteries (MAPCAs), pulmonary arteriovenous fistulas, coronary fistulas, veno-venous communications, which may lead to desaturation in patients with a single ventricle in the period after Glenn or Fontan procedures, scimitar artery, and the aorto-pulmonary window. In this report, we discuss the experiences of patients who underwent transcatheter occlusion of abnormal vascular connections.

**Methods:** The charts of patients, who underwent transcatheter occlusion for abnormal vascular connections between March 2010 and December 2013, were retrospectively reviewed. A total of 38 patients (25 males) were studied.

**Results:** The mean age of the patients was  $5.1 \pm 9.0$  years (range, 3 months–43 years). The mean weight of the patients was  $16.1 \pm 17.3$  kg (range, 3.3–89 kg). The major indications of the transcatheter occlusion of abnormal vascular connections and the devices used for the occlusion are summarized in **Table 1**. Fifty-five devices were used for the occlusion of 44 abnormal vascular connections in 38 patients. In 24 patients, 32 MAPCAs were occluded. Tetralogy of Fallot was present in 13 cases, pulmonary atresia with ventricular septal defect was present in 7 cases, congenital heart disease with single ventricle physiology was present in 7 cases, and the primary pathology was closed vascular structures in the remaining 12 patients. In all the patients, the process was successfully completed. Major complications associated with occlusion were not observed in any of the patients either during and after the procedure or throughout the follow-up period. The mean follow-up period for the subjects of this investigation was  $17.5 \pm 12.7$  months (range, 1–45 months).

**Conclusions:** Transcatheter occlusion of abnormal vascular connections can be applied with very high success rates and low complication rates, depending on the type of pathology that is being treated. Transcatheter occlusion can be used to treat abnormal pathologies, to act as a complement to surgical treatment, or to mitigate post-operative complications.

**Table 1:** Major indications of transcatheter occlusion of abnormal vascular connections and the devices used.

Indications	n	AVP-I	AVP-II	GC	DC	ADO-I	ADO-II	ASO
MAPCA	24	8	4	18	2			
PAVM	3	7	1					
VVC	3	2						1
CCF	3				4		1	
Ao-SVF	2						1	
SA	2			5				
APW	1					1		
<b>Total</b>	<b>38</b>	<b>17</b>	<b>5</b>	<b>23</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>1</b>

MAPCA: major aorto-pulmonary collateral artery, PAVM: pulmonary arteriovenous malformation, VVC: veno-venous connection, CCF: coronary-cameral fistula, Ao-SVF: aort-systemic venous fistula, SA: scimitar artery, APW: aorto-pulmonary window. n: number of patients, AVP-I,II: Amplatzer Vasküler Plug I,II, GC: Gianturco coil, DC: Detachable coil, ADO-I,II: Amplatzer Duct Occluder I,II, ASO: Amplatzer Septal Occluder.