

Transcatheter recanalization of the anomalous origin of the right pulmonary artery from the ascending aorta after surgical correction

Çıkan aorttan anormal çıkışlı sağ pulmoner arterin cerrahi düzeltme sonrası transkateter rekanalizasyonu

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An anomalous origin of the right pulmonary artery (RPA) from the ascending aorta (AORPA) is a rare cardiac malformation.^[1] Partial or complete occlusion of the RPA may be seen following re-implantation of the RPA on the main pulmonary artery (MPA). An occluded RPA can be recanalized either surgically or by transcatheter methods.

A five-month-old female infant diagnosed with AORPA was admitted to our hospital. She had

a history of RPA re-implantation on the MPA at 11 days old. One month after the first operation, embolectomy was performed for proximal RPA thrombosis. Transthoracic echocardiography on admission revealed a disconnected RPA (Figure 1), which was confirmed with computed tomography angiography (CTA) (Figure 2).

On catheter angiography, contrast injection through the right ventricular outflow tract and

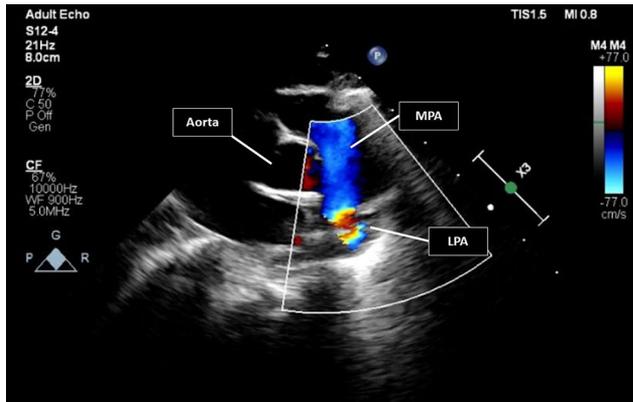


Figure 1. Transthoracic echocardiography showing disconnected right pulmonary artery.

MPA: Main pulmonary artery; LPA: Left pulmonary artery.

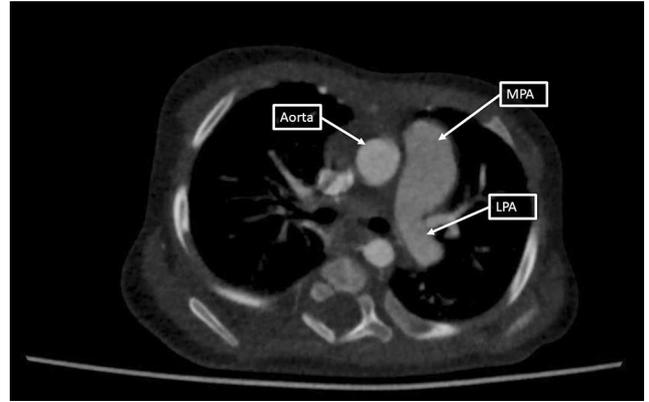


Figure 2. Computed tomography angiogram demonstrating right pulmonary artery disconnection.

MPA: Main pulmonary artery; LPA: Left pulmonary artery.

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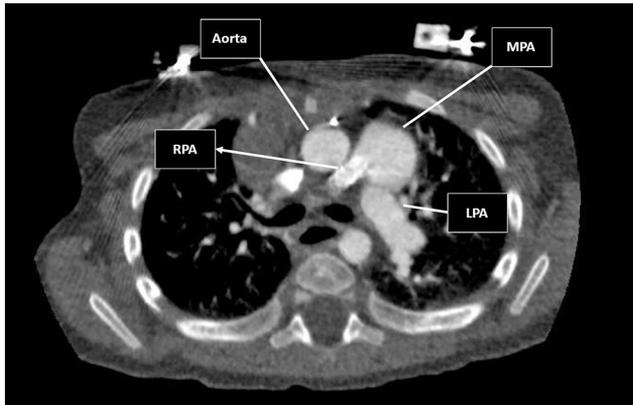
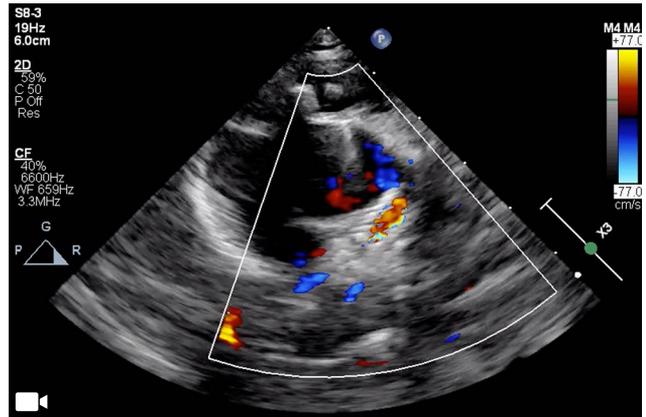
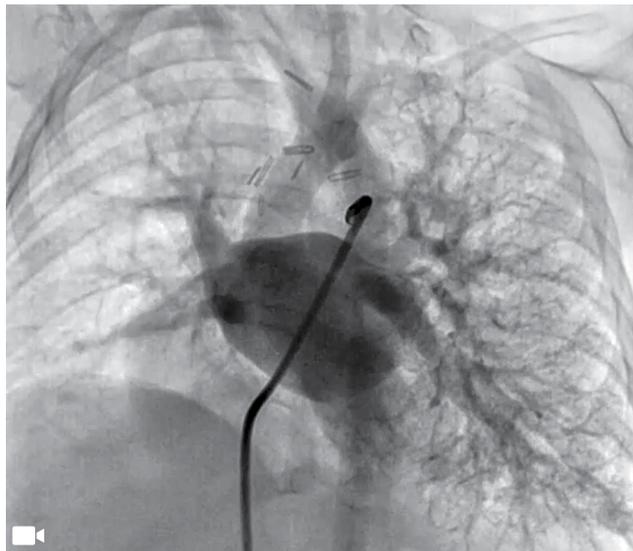


Figure 3. Computed tomography angiogram demonstrating right pulmonary artery connection and patent stent lumen.

MPA: Main pulmonary artery; LPA: Left pulmonary artery; RPA: Right pulmonary artery.



Video 2. Contrast material administration through hand injection showing a tiny passage to the proximal right pulmonary artery.



Video 1.

Part 1: Catheter angiogram showing that the main pulmonary artery and left pulmonary artery are filled with contrast material whereas the right pulmonary artery is not opacified. The stump of RPA is noticeable.

Part 2: Contrast material administration through hand injection showing a tiny passage to the proximal RPA.

Part 3: The angiogram showing that the 0.014-inch extrasupport coronary guidewire passes through the obstructed segment, and catheter position is confirmed by contrast injection through a 2Fr microcatheter.

Part 4: Predilation of the target lesions with consecutive angioplasty balloons.

Part 5: Angiogram showing persisting proximal RPA stenosis after predilations.

Part 6: Angiogram showing bare metal coronary stent implanted into the proximal RPA.

Part 7: Post-deployment angiogram showing optimal stent implantation with revascularization of RPA.

RPA: Right pulmonary artery.

MPA showed no flow to the distal RPA branches (Video 1-Part 1). Then, additional contrast material injection to the obstructed part showed a tiny passage to the RPA (Video 1-Part 2). A 0.014-inch extra-support coronary guidewire was passed through the obstructed segment. A 2Fr microcatheter passed over the guidewire (Video 1-Part 3). Predilation of the target lesions with 2×15 mm, 4×15 mm coronary angioplasty balloons was followed by a 6×20 mm Numed TyShak II® balloon (NuMED Canada Inc., Cornwall, Ontario, Canada) (Video 1-Part 4). Proximal RPA stenosis, measuring 2.7 mm, persisted after ballooning (Video 1-Part 5). A 5Fr guiding catheter was advanced over the extrasupport coronary guidewire up to the distal RPA. A 4.5×12 mm bare-metal coronary stent was successfully deployed into the proximal RPA (Video 1-Part 6). The post-deployment angiogram showed optimal stent implantation with revascularization of RPA (Video 1-Part 7). The procedure was completed without any complications. The CTA and transthoracic echocardiography three months after the catheter intervention showed a patent RPA stent (Figure 3, Video 2). This case demonstrates that transcatheter recanalization may be possible in postoperative pulmonary artery obstructions, even in patients with minimal flow to distal branches.

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Author Contributions: Wrote the paper: B.Y.; Design: S.U.A.; Literature review: S.G.; Data collection: M.M.A.; Control and supervision: A.G.

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