

Anomalous origin of circumflex coronary artery from right pulmonary artery associated with atrial septal defect

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We describe a 4-year-old girl with anomalous origin of the left circumflex coronary artery from the right pulmonary artery and large atrial septal defect. This is the first reported case of such association. Surgical reimplantation of the anomalous left circumflex coronary artery to the aorta and atrial septal defect surgical closure was performed, with no postoperative complications.

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Introduction

Anomalous origin of the left circumflex coronary artery (LCx) from the right pulmonary artery (RPA) is an extremely rare coronary anomaly [1,2]. The clinical course of LCx may not always be favorable, and patients need surgical treatment in early infancy [1,3]. A literature search revealed no cases of anomalous LCx associated with atrial septal defect (ASD) reported to date.

Case report

A 3-year-old girl (weight 15 kg) with large secundum ASD was referred to the Madinah

Cardiac Center, Madinah Munawara, Saudi Arabia. Echocardiography showed large ASD with deficient rims, severe dilatation of right ventricle and right atrium, with normal left ventricle size and ejection fraction (62%), and abnormal flow in the RPA presumed to be a small aortopulmonary collateral or small coronary artery fistula.

The ASD was closed surgically at this time. Follow-up echocardiogram after 1 year demonstrated abnormal flow into the RPA with mild dilatation of left ventricle, with suspicion of coronary anomaly (Fig. 1). Diagnostic cardiac catheterization was done (Fig. 2). Aortograms and selective coronary angiograms in different projections showed a normal right and left main coronary arteries arising from the respected coronary sinus.

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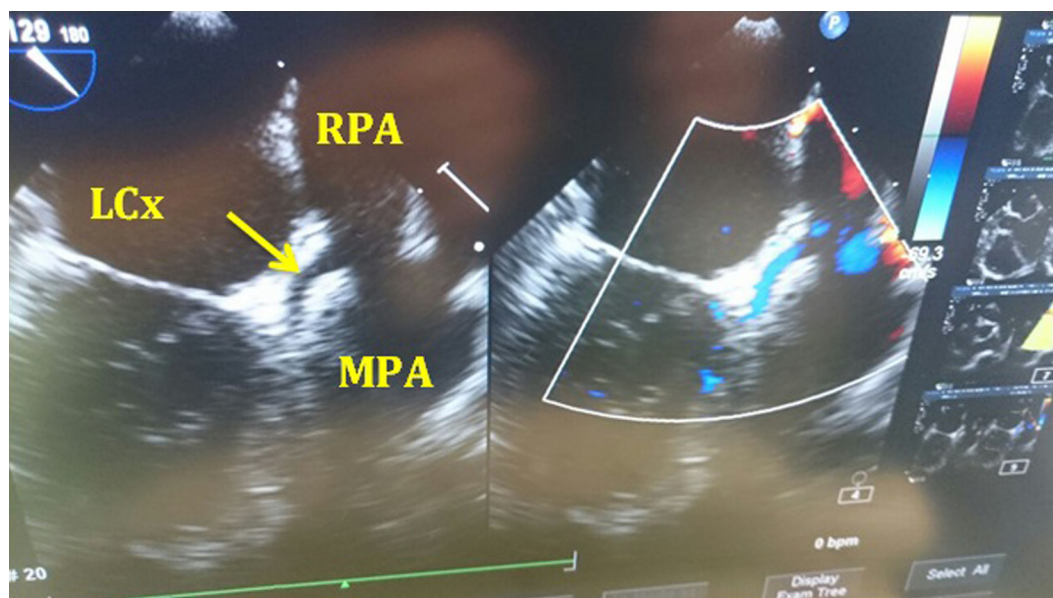


Figure 1. Transoesophageal echocardiography showed main pulmonary artery (MPA), right pulmonary artery (RPA), and left circumflex coronary artery (LCx).

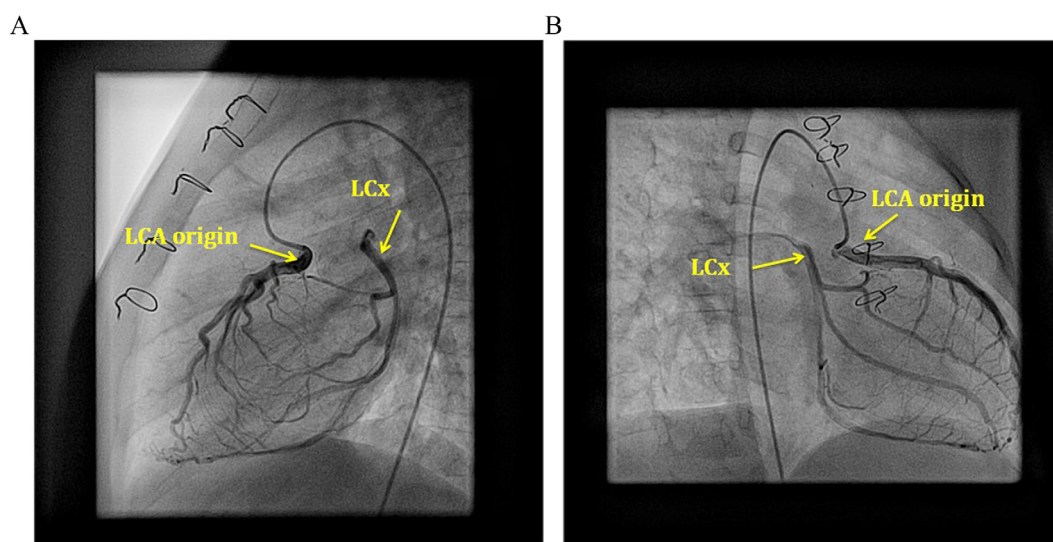


Figure 2. (A). Coronary angiogram lateral view showing that the circumflex artery was filling via collateral from the left anterior descending artery and opening into the right pulmonary artery, left coronary artery origin (LCA) left circumflex coronary artery (LCx). (B). Coronary angiogram anteroposterior view showing that the circumflex artery was filling via collateral from left the anterior descending artery and opening into the right pulmonary artery, LCA LCx.

The left anterior descending coronary artery was communicating with the LCx with multiple significant collaterals, which drained ultimately into the proximal RPA. She underwent reoperation at age 4 years. Operation was performed through median sternotomy using hypothermic (28 °C) cardiopulmonary bypass. The pulmonary artery was dissected, the large LCx originating from the posterior aspect of RPA, to the right of the ascending

aorta identified (Fig. 3), and was mobilized almost 2 cm without difficulty. Antegrade Custodiol Cardioplegia (DR FRANZ KOHLER CHIEME GMBH, Bensheim, Germany) cardioplegia was given via the aortic root, RPA and aorta were transected, and a generous button of the orifice of the anomalous coronary artery was mobilized. It was reanastomosed to the ascending aorta above the sinotubular junction posteriorly between the left

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