

## A 69-year-old Woman with Anomalous Origin of Left Coronary Artery from the Pulmonary Artery: Surgical Repair Using a Trap-door Flap

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We present a patient with anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA), which was diagnosed and corrected in her 60 s. The patient is the oldest documented survivor of ALCAPA who underwent a surgical repair. ALCAPA should be corrected surgically to restore the dual coronary system at any age and this case shows that the surgical procedure may be performed safely even in an elderly patient.

Key words: 1. Coronary artery pathology  
2. ALCAPA syndrome

### CASE REPORT

Anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA), a rare congenital anomaly, is rarely identified in adulthood because the majority of untreated patients die in their infancy or early childhood [1]. A 69-year-old woman with ALCAPA presented with angina pectoris. She had already been diagnosed with ALCAPA six years prior to presenting with chest pain, but had refused to have surgery. With the recurring symptom, she underwent surgical repair with a trap-door flap, described in this report. Here, we report a successful surgical repair of ALCAPA at an old age.

A 69-year-old female without risk factors for coronary atherosclerotic disease was admitted for chest pain. Six years prior, she had been hospitalized for chest pain. At that time, a treadmill exercise test demonstrated an ST segment change at stage 2. With suspected angina pectoris, cardiac catheter-

ization was performed, which showed a dilated right coronary artery (RCA) with abundant collaterals supplying the left coronary system and the retrograde left coronary artery (LCA) flow draining into the main pulmonary artery (MPA), which confirmed the ALCAPA. The left ventricular (LV) function and dimensions were of normal values on transthoracic echocardiography (TTE). The patient refused surgery because the symptom was relieved by medicating with isosorbide dinitrate and carvedilol. However, she suffered from chest pain again while jogging six years after the diagnosis. At the most recent admission, she presented with aggravated chest pain. However, coronary angiography showed no other atherosclerotic coronary lesions except for the known ALCAPA, and LV function was still preserved on TTE. As the LCA originated from the posterior side of the MPA 4 mm apart from the aorta on heart computed tomography (CT) (Fig. 1), direct coronary transfer using a trap-door flap was planned. Cardiopulmonary bypass with aortobicaval cannulation and

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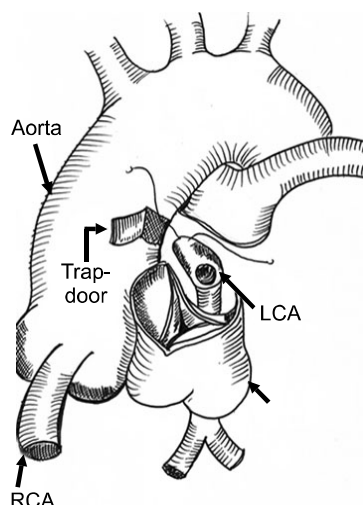
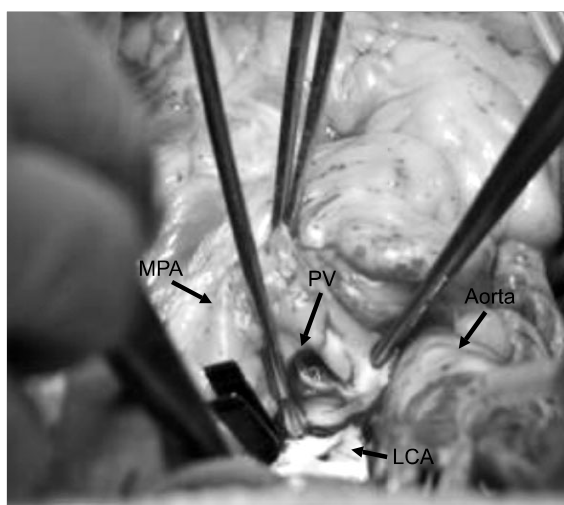
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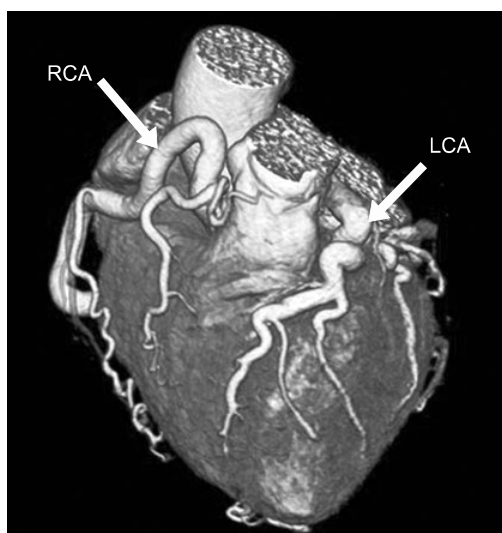
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**Fig. 2.** The posterior sinus of the main pulmonary artery, including the left coronary artery (LCA), was excised. The LCA was transferred to the aorta with a trap-door flap. RCA= Right coronary artery, MPA=Main pulmonary artery; PV=Pulmonary valve.



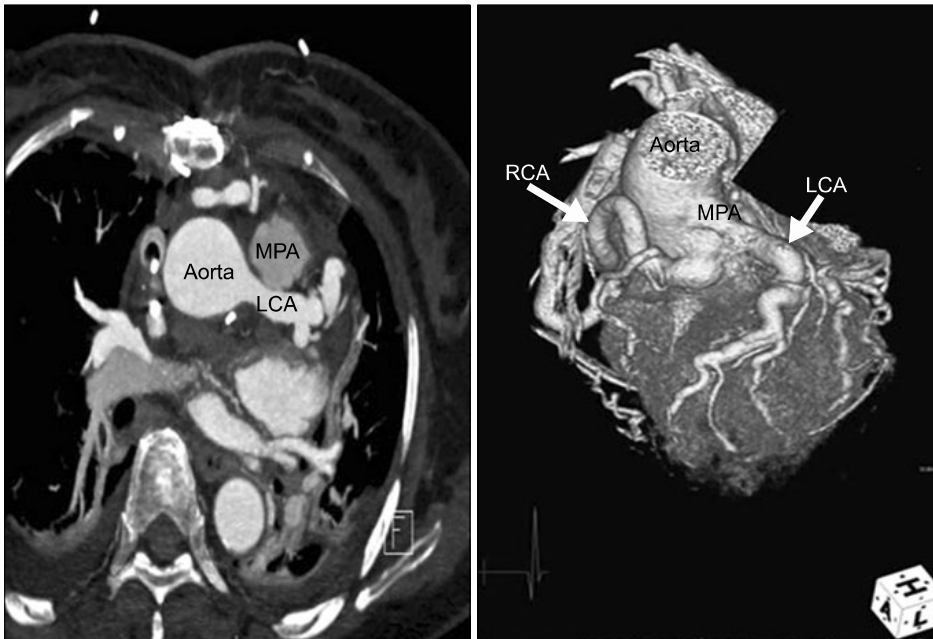
**Fig. 1.** Preoperative CT angiogram shows the normally originating dilated tortuous right coronary artery (RCA) and the abnormal origin of the left coronary artery (LCA) from the main pulmonary artery (MPA).

moderate hypothermia (24°C) was established. Both the aorta and the pulmonary artery were cross-clamped and antegrade cold blood cardioplegic arrest was performed. With transverse incision of the MPA, most of the posterior sinus of the MPA, including the LCA, was excised and reimplanted to the trap-door flap incision created just above the left coronary sinus of the aorta (Fig. 2). The posterior wall of the MPA was reconstructed with bovine pericardium. Total cardiopulmonary bypass time was 135 minutes and aorta cross-clamp time was

83 minutes. Vital signs were stable at the intensive care unit without any inotropic agents and the patient was transferred to the general ward on postoperative day 3. The postoperative TTE and coronary CT scan showed successful coronary transfer (Fig. 3). The patient was discharged on postoperative day 9 with aspirin 100mg and has been doing well on follow-up without chest pain for 7 months.

## DISCUSSION

As few patients with ALCAPA survive past childhood without surgical repair [2], untreated ALCAPA in the elderly is very rare. In this case, the patient lived asymptotically with ALCAPA for over 6 decades, and her LV function was well-preserved. Because of the risks of cardiac surgery at old age, conservative medical management may be preferable to surgery. Two patients with ALCAPA whose age was over 70 have been reported, and they did not undergo surgical repair because of their age [3,4]. As in our case, the patient had remained in good health while on medication for six years. However, she had to undergo surgical repair because of recurring chest pain. This may suggest that medical management may not be the best treatment option even for older adult patients with ALCAPA. Coronary transfer using a trap-door flap has been reported to be a useful method in adults, as it minimizes anastomotic tension and distortion [5,6]. We performed a successful LCA transfer using this translocation technique in our patient.



**Fig. 3.** Postoperative CT shows successful translocation of the left coronary artery (LCA) to the ascending aorta. RCA=Right coronary artery; MPA=Main pulmonary artery.

ALCAPA presenting at old age should be treated with surgical repair, thus creating a dual coronary system to restore LV function. Trap-door coronary transfer is a feasible method with good results in adult ALCAPA.

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