

# Percutaneous coronary intervention on a single coronary ostium

Przezskórna interwencja wieńcowa u chorego ze wspólnym ujściem tętnic wieńcowych

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## Abstract

Anomalous origin of the left main coronary artery from the right sinus Valsalva is extremely rare when not associated with other congenital cardiac anomalies. It is reported to constitute just 0.019% of angiographic series. These patients are usually asymptomatic and prone to atherosclerotic disease, however, they also may have normal coronary arteries. We report here the unusual case of a patient with ST segment elevation myocardial infarction who was managed by percutaneous coronary intervention performed through single coronary ostium.

**Key words:** coronary angioplasty, myocardial infarction, single coronary ostium

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## CASE REPORT

A 72 year-old man was admitted presenting ST segment elevation accompanied by cardiogenic shock. His medical history was significant for hypertension and diabetes mellitus. On physical examination, his blood pressure was 80/40 mm Hg and Killip class was 3. On electrocardiography, he was consistent with acute ST segment elevation lateral myocardial infarction. Owing to cardiogenic shock due to myocardial infarction, it was felt that the best treatment for this patient was percutaneous coronary intervention (PCI). Left coronary artery catheterization with Judkins left four diagnostic catheter did not demonstrate any vessel originating from the left coronary sinus. Right coronary artery with Judkins right four (JR4) diagnostic catheter demonstrated a single coronary artery originated from a single coronary ostium in the right sinus Valsalva and gave rise to three major branches which was trifurcated after a short distance.

The left anterior descending artery (LAD) had a 100% occlusion in the mid-portion without any collateral flow. The circumflex coronary artery equivalent coursed posterior to the pulmonary artery and supplied its normal territory without any lesion. The right coronary artery (RCA) was supplying in

its normal territory and had a 99% occlusion after the ventricular branch (Fig. 1A).

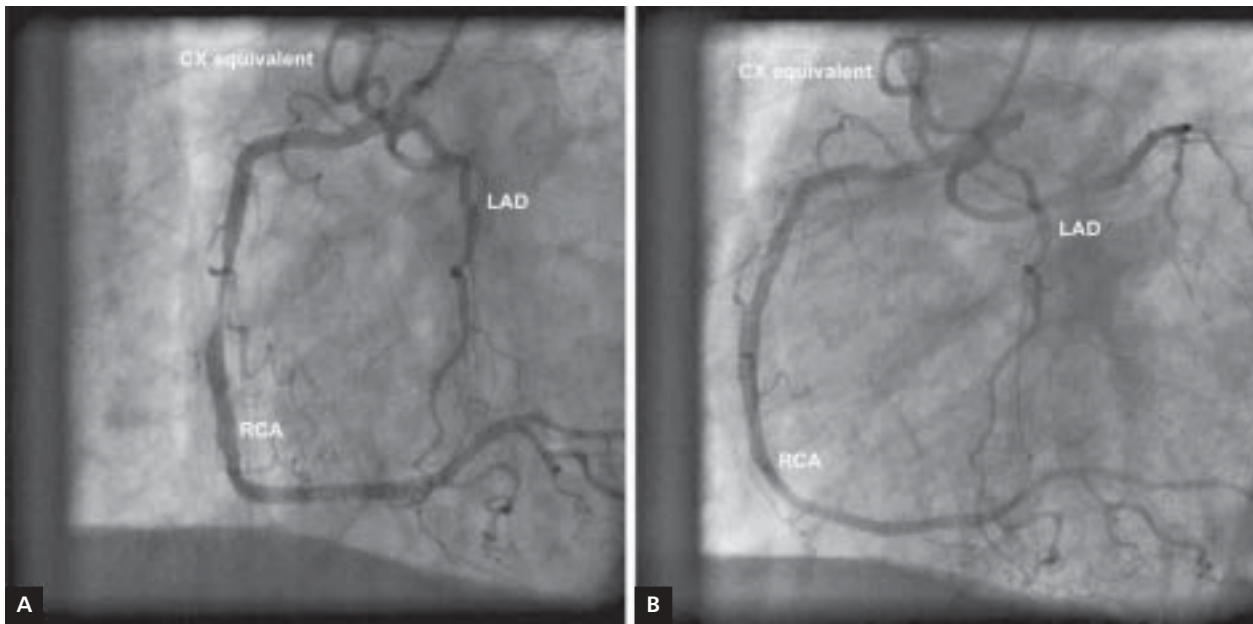
We decided to perform PCI of both the coronary arteries. Afterwards, percutaneous transluminal coronary stenting to the right coronary artery and LAD was performed using a JR4 guiding catheter to engage, a 0.014 high torque floppy guidewire to cross the lesions. 4.0 × 15 mm (Ephesos BMS, Nemed, Turkey) was deployed for RCA and 3.0 × 18 mm (Ephesos BMS, Nemed, Turkey) for LAD, respectively. Both arteries were successfully opened without any residue or complication (Fig. 1B). Then, the patient was treated successively with intravenous diuretics, morphine, an intra-aortic balloon pump and mechanical ventilation. But unfortunately, the patient died three days after the procedure.

## DISCUSSION

Anomalous origin of the left main coronary artery (LMCA) from the right sinus Valsalva as a single coronary ostium is extremely rare when no associated with other congenital cardiac anomalies and has been reported to constitute just 0.019% of angiographic series [1–3]. These patients are usu-

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**Figure 1. A.** Coronary angiogram of single coronary ostium arising from the right aortic sinus showing total occlusion of left anterior descending artery (LAD) and significant stenosis in the mid-portion of right coronary artery (RCA); **B.** Coronary angiogram of single coronary ostium showing the restoration of both coronary blood flows after percutaneous coronary intervention; CX — circumflex coronary artery

ally asymptomatic [4]. Nevertheless, these anomalous arteries are probably as susceptible to atherosclerosis as are normally arising coronary arteries [5]. Ischemia is the consequence of anatomical malformations in the anomalous vessel, including the acute angle take-off, narrowed slit-like orifice that collapses in a valve-like manner, the proximal intramural course which is squeezed within the aortic wall, and the compression between the aorta and the pulmonary artery, particularly during exercise.

Shirani et al. [4] found that clinical events in patients with a single coronary ostium and aberrant course of a coronary artery were most often related to the underlying atherosclerotic coronary artery disease. The indication for coronary angiography in those patients is usually atypical chest pain. Just the same, patients may develop syncope, angina pectoris, ventricular arrhythmias, sudden cardiac arrest and myocardial infarction, especially during or after exercise (as in this case) [6, 7]. The literature for myocardial infarction of single coronary ostium shows quite a few case reports related to this item [8, 9]. Because of the unusual direction of the coronary artery and tortuous angle, catheterization of the single coronary ostium is usually difficult. In addition, there can be serious complications of this procedure, such as coronary dissection due to extension of dissection retrogradely towards origin of the LMCA. In conclusion, the selection of appropriate catheters and other equipment and the provision of

surgical back-up are essential for the success of coronary revascularization.

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