

# Double Right Coronary Artery in the Presence of Coronary Atherosclerosis: Very Unusual Form of Coronary Artery Anomaly

## ATEROSKLEROTİK ÇİFT SAĞ KORONER ARTER: OLDUKÇA SEYREK GÖZLENEN BİR KORONER ARTER ANOMALİSİ

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### Summary

Double right coronary artery is a very unusual coronary artery anomaly. We report an unusual case of double right coronary artery associated with coronary atherosclerosis in both right coronary arteries in a patient with history of myocardial infarction. Coronary angiography revealed two separate RCAs originating from a single ostium in the right sinus of Valsalva. Right coronary artery, before being divided into two right coronary arteries, gave off the conus and sinus node artery, and after being divided, both RCAs gave right ventricular branches and both were seen to end up as the posterior descending artery. Posterior descending branches of anteriorly located right coronary artery were considerably smaller than those of the posteriorly located right coronary artery. The anterior right coronary artery had 50% lesion and atherosclerotic plaques in posterior right coronary artery. Double right coronary anomaly, a very rare coronary anomaly, may cause of myocardial infarction.

**Key Words:** Double right coronary artery,  
Coronary anomaly, Atherosclerosis

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### Özet

Çift sağ koroner arter anomalisi çok seyrek görülen bir koroner arter anomalisidir. Bu olguda, miyokard infarktüsü öyküsü olan, oldukça seyrek rastlanan ve her iki sağ koroner arterinde de aterosklerotik lezyon izlenen bir hasta tartışıldı. Koroner anjiyografide sağ koroner arter sağ sinus Valsalvadan tek segment halinde çıkıp çok kısa bir segment sonrası iki sağ koroner arter olarak seyrediyordu. İkiye ayrılmadan önce konus ve sinus nod arterini, ikiye ayrıldıktan sonra ise her iki sağ koroner arter de sağ ventriküler dalları veriyor ve arka inen dalları vererek sonlanıyordu. Önde yerleşik olan sağ koroner arter yaklaşık %50'lik bir lezyona ve arkada yerleşik olan sağ koroner arter ise yaygın aterosklerotik plaklara sahipti. Seyrek bir koroner arter anomalisi olan çift sağ koroner arter anomalisi, miyokard infarktüsü nedeni olabilir.

**Anahtar Kelimeler:** Çift sağ koroner arter,  
Koroner anomaly, Aterosklerozis

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The incidence of coronary artery anomaly varies between 0.2% and 2% in the adult population (1-5). Although various types of right coronary artery (RCA) anomalies have been reported previously, double RCA with atherosclerosis have been observed in just one case (6-10). In our case, right coronary artery originated from a single ostium in right sinus of Valsalva and gave two similar branches after a short segment. We believe that this unusual variance of the coronary arteries in association with atherosclerosis has been reported only once.

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### Case report

A 46-year-old male patient with chest pain was hospitalized for symptom of angina at rest. He had a previous inferior myocardial infarction five years ago. He was a heavy smoker for 25 years. The blood pressure and pulse rate were 120/80 mmHg and 74 b.p.m respectively. The physical examination was completely normal. There was T-wave inversion in II, III and aVF leads. Cardiac Troponin T (cTn T) was found as 0.64 ng/dL (normal range: 0-0.1 ng/dL). The patient was considered as acute coronary syndrome. The patient was treated with intravenous tirofiban

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**Figure 1.** Selective right coronary angiography (Right anterior oblique projection).

was treated with intravenous tirofiban infusion, a glycoprotein IIb/IIIa blocker, subcutaneous low molecular weight heparin, and also treated with simvastatin, aspirin, metoprolol, nitrates, clopidogrel orally. He did not have chest pain during 5 days follow-up.

Left ventriculography and selective left and right coronary artery angiography were performed using Judkin's technique. The left ventriculography showed inferior wall hypokinesia and an ejection fraction of 55%. The left coronary artery was normal in its origin and distribution. Injection of radiopaque material into the right coronary sinus revealed two separate RCAs originating from a single ostium in the right sinus of Valsalva. The right coronary artery originating from a single ostium in the right sinus of Valsalva gave off the conus and sinus node arteries, and then it was divided into two right coronary arteries. Both right coronary arteries gave right ventricular branches and both ended up as the posterior descending arteries. Posterior descending branches of anteriorly located right coronary artery were considerably smaller than those of the posteriorly located right coronary artery (Figure 1 and Figure 2). It revealed 50% lesion in the anterior right coronary artery and

**Figure 2.** Selective right coronary angiography (Left anterior oblique projection).

atherosclerotic plaques in posterior right coronary artery.

### Discussion

Double right coronary artery is a very rare coronary anomaly. There is no mention about this anomaly in a series which involved 126595 patients who underwent coronary angiography (1). In another study, only one case was found in a series of 7400 patients (5). So far double right coronary anomaly have been reported in only a few cases (5-9). These cases that were reported previously were presented as anomalies of double right coronary artery both originating from a single ostium from right sinus Valsalva. But sometimes it is difficult to diagnose such anomalies. It is usually hard to differentiate a high take off of a large right ventricular branch and a right coronary anomaly. And sometimes this results in suspicion about the diagnosis. Right anterior oblique images show the course of artery better and make it easy to differentiate a large right ventricular branch and a right coronary anomaly (11). However, this extremely unusual anomaly called double RCA with atherosclerosis has been reported in only one case (10). In our case, atherosclerotic lesions were observed

in both RCAs. We speculated that, besides coronary anomaly, these lesions might be the reason of prior myocardial infarction and present acute coronary syndrome.

The case report presented here involves an extremely unusually occurring form of double right coronary artery with atherosclerosis and constitutes the second precisely defined case in the literature.

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