

A Rare Coronary Anomaly; Coronary Continuity: Case Report

Nadir Bir Koroner Anomali; Koroner Devamlılık

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For the video/videos of the article:



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ABSTRACT Coronary continuity is described as a direct communication between two epicardial coronary arteries. Unidirectional or bidirectional coronary flow patterns were reported in this anomaly previously. The issue that whether this anomaly is a cause of ischemia or a protector against ischemia continues to be a matter of debate. Here, we represent an example of this rare coronary anomaly, that has unidirectional flow from the right coronary artery to the circumflex artery without causing ischemia which was established by myocardial perfusion imaging.

Key Words: Coronary vessel anomalies; coronary angiography

ÖZET İki epikardiyal koroner arter arasındaki doğrudan bağlantının varlığı koroner devamlılık olarak tanımlanmaktadır. Sunduğumuz bu anomalide tek yönlü veya iki yönlü koroner akım örnekleri tespit edilmiştir. Bu anomalinin iskemi sebebi olduğu veya iskemiye karşı koruyucu olduğu konusu halen tartışma görüşü olmaya devam etmektedir. Burada, sağ koroner arterden sirkumfleks artere tek taraflı akımı olan ve miyokard perfüzyon sintigrafisi ile iskemiye sebep olmadığı gösterilmiş olan bu nadir koroner anomalinin bir örneğini sunuyoruz.

Anahtar Kelimeler: Koroner damar anomalileri; koroner anjiyografi

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Coronary continuity, also known as coronary arcade or inter-coronary connection, is a rare coronary anomaly. Unidirectional or bidirectional flow patterns, which can either cause ischemia or protect the myocardium against the ischemic effects of coronary artery disease, are highly debated arguments regarding coronary continuity. Here, we present an example of this rare anomaly and review the opposing comments in the literature.

CASE REPORT

A fifty-two-year-old woman with a history of hypertension and smoking was referred for coronary angiography due to retrosternal pain during a treadmill exercise test. Her right coronary angiography revealed a complete opacification of the circumflex artery (CX) through an intercoronary connection between the right coronary artery (RCA) and the CX

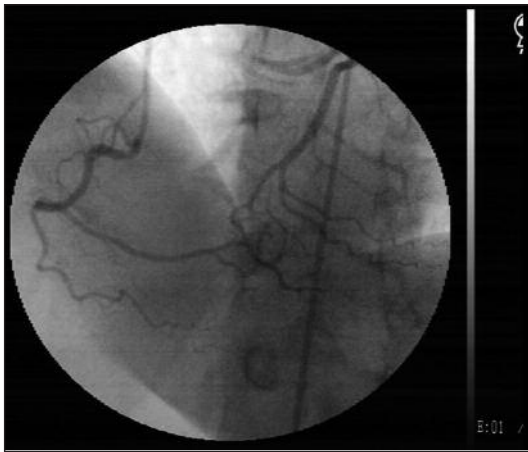


FIGURE 1: The retrograde circumflex artery filling through a common vessel with right coronary injection.

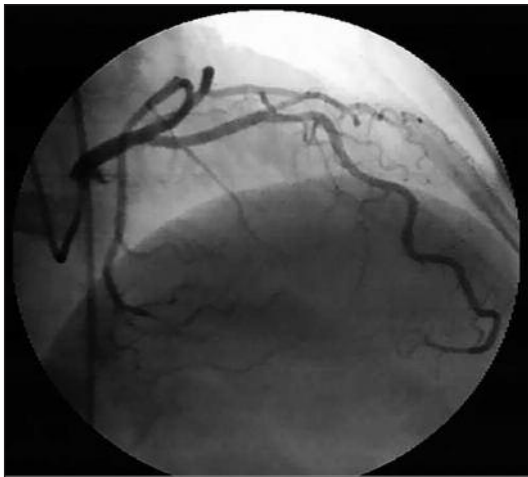


FIGURE 2: Left coronary injection showing normal left coronary angiography. Note that there is no filling of any part of the right coronary.

(Figure 1, Video 1). All three coronary arteries were normal. We found that the coronary flow direction ran from the RCA toward the CX. Her left coronary injection could not fill any portion of the RCA (Figure 2). In patient's medical history she had chest pain during the treadmill test, possibly caused by coronary steal, for that reason we performed myocardial perfusion imaging to evaluate the objective ischemia evidence. The perfusion imaging revealed normal coronary perfusion.

DISCUSSION

Coronary continuity is a rare coronary anomaly characterized by direct communication between two major coronary arteries. The vast majority of published cases show this anomaly between the RCA and the CX, with posterolateral artery continuity and connection between the left anterior descending (LAD) and the RCA were reported so.¹ The hallmark of coronary continuity is the absence of any stenosis between the communicated arteries and the common coronary vessel normal in appearance, which represents an important difference from a tortuous collateral vessel. Unidirectional or bidirectional flow patterns have been reported in different cases, and some of those claimed that this anomaly could cause ischemia.² The theory that unidirectional flow and coronary ischemia are due to coronary steal can be incorrect regarding coronary continuity. The left coronary artery diameter is wider than the RCA, and when injecting a contrast agent, applied pressure at the distal part of the RCA is usually higher than the distal part of the CX. According to physical laws, it is expected that high-pressured radio-opaque can fill the CX following an RCA injection; however, low-pressured radio-opaque cannot fill the RCA from a left coronary injection. This can explain why certain cases had a unidirectional flow. If the left injection pressure is high enough, such as in selective CX angiography, we may see the flow from the CX to the RCA. Additionally, as discussed above, it is expected that coronary continuity must have a protective effect against ischemia. Ozlu et al. reported a case of a protective effect brought by an inter-coronary connection that prevented the detrimental effect of coronary artery occlusion.³ We also demonstrated that there was no ischemia with myocardial perfusion imaging. In conclusion, coronary continuity is a rare coronary anomaly that has the potential for bidirectional flow between connected coronaries. These patients may have protection against the deteriorating effects of coronary occlusive events.

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