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Coronary artery anomalies and dynamic changes in collateral circulation

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Introduction: In addition to assessing atherosclerotic disease, coronary angiography enables the detection of rare anatomical variants and unusual patterns of coronary circulation.

Case report: The cases include coronary artery fistulas connecting the left anterior descending artery (LAD) to the left ventricle (LV) and the LAD to the pulmonary artery (PA). An LAD–LV fistula is an abnormal direct communication between a coronary artery and the left ventricular cavity, whereas an LAD–pulmonary artery fistula allows blood to drain from the coronary artery into the pulmonary circulation. LAD-PA fistula may cause coronary steal syndrome, in which blood is diverted through the fistula, potentially reducing myocardial perfusion and causing ischemia. Anomalous coronary origins are also presented, including a common origin of all three major coronary arteries: LAD, left circumflex artery (LCx), and right coronary artery (RCA) and a common origin of the LCx and RCA. Such anatomical variants warrant careful assessment of vessel origin and course because of their potential clinical and procedural implications. Finally, the angiographic disappearance of previously visible collateral vessels following successful percutaneous coronary intervention (PCI) is demonstrated; this may reflect altered pressure gradients and reduced collateral flow after restoration of antegrade perfusion.

Conclusion: These findings highlight the anatomical diversity and functional adaptability of coronary circulation. Their recognition is important for accurate angiographic interpretation, therapeutic decision-making, and understanding hemodynamic changes after revascularization.[1-6]

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LITERATURE

1. Buccheri D, Chirco PR, Geraci S, Caramanno G, Cortese B. Coronary artery fistulae: anatomy, diagnosis and management strategies. Heart Lung Circ. 2018;27(8):940-51. https://doi.org/10.1016/j.hlc.2017.07.014
2. Verdini D, Vargas D, Kuo A, Ghoshhajra B, Kim P, Murillo H, et al. Coronary-pulmonary artery fistulas: a systematic review. J Thorac Imaging. 2016;31(6):380-90. https://doi.org/10.1097/RTI.0000000000000232
3. Yun G, Nam TH, Chun EJ. Coronary artery fistulas: pathophysiology, imaging findings, and management. Radiographics. 2018;38(3):688-703. https://doi.org/10.1148/rg.2018170158
4. Brothers JA, Frommelt MA, Jaquiss RDB, Myerburg RJ, Fraser CD Jr, Tweddell JS. Expert consensus guidelines: anomalous aortic origin of a coronary artery. J Thorac Cardiovasc Surg. 2017;153(6):1440-57. https://doi.org/10.1016/j.jtcvs.2016.06.066
5. Seiler C, Stoller M, Pitt B, Meier P. The human coronary collateral circulation: development and clinical importance. Eur Heart J. 2013;34(34):2674-82. https://doi.org/10.1093/eurheartj/eht195
6. Meier P, Schirmer SH, Lansky AJ, Timmis A, Pitt B, Seiler C. The collateral circulation of the heart. BMC Med. 2013;11:143. https://doi.org/10.1186/1741-7015-11-143