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**RIGHT AND LEFT CORONARY ARTERY DOMINANCE AND BRANCHING
VARIATIONS**

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Relevance. The morphology of the coronary arterial system shows high morphological heterogeneity, which has a direct effect on the pathophysiology of myocardial ischemia, the effectiveness of revascularization procedures, and cardiac surgery outcomes. The key aspect that clinicians need to understand is the patterns of coronary dominance, as well as right, left, or balanced, and the exact architecture of the branching. Although advanced imaging is widely used, cadaveric studies of the anatomy are the standard for providing an in-depth insight into the subtle differences that might be missed in the living environment. With the growing sophistication of interventional cardiology and cardiac surgery in the world, a holistic, locale-specific insight into such variants has a high clinical and educational value. This research addresses the need for detailed morphometric data on coronary artery patterns within the population represented by the anatomical collection at Belarusian State Medical University.

Aim: to examine and record the morphological variants of the prevalence of coronary artery and proximal branching patterns and to obtain quantitative morphometric data (lengths, widths, and inter-vessel distances) through the dissection of human cadaveric hearts.

Materials and methods. The human cadaveric hearts of 5 hearts were studied descriptively and in an observational study by the Department of Normal Anatomy at Belarusian State Medical University. Each specimen was measured as follows: type of coronary dominance (right, left, or balanced), origin and branching pattern of the left main coronary artery (LMCA), origin and course of the right coronary artery (RCA), and the existence of any accessory or aberrant vessels. The length and the diameter of the LMCA, the diameter of the RCA at its origin, the distance between the ostia of the right and left coronary arteries, and the size of the gaps between the proximal branches are measured. The information was recorded in photographs and interpreted in a descriptive manner.

Results and their discussion. The 5 specimens were analyzed, and the anatomical configurations varied. In 3 hearts (60%), there was right-coronary dominance; in 1 heart (20%), left-coronary dominance, and in 1 heart (20%), there was an equal circulation. In 4 hearts (80%), the LMCA showed a classical bifurcation (LMCA into LAD and LCx) whereas in 1 heart (20%), the LMCA had a trifurcation pattern (LMCA into LAD and LCx and a large ramus intermedius). The average length of the LMCA was 9.4 mm (3-12 mm), and average diameter was 4.2 mm. The average size of the RCA source was 3.8 mm. The average distance between the right and the left coronary arteries was found to be 12.5 mm. In the specimen where dominance was left, the LCx artery was significantly large, which resulted in the posterior descending artery (PDA). There was one instance of right-dominance with a distinctive high origin of a conus branch. Such morphometric deviations conform to the known world literature but emphasize the range of patterns in our sample that are in the area. The range of LMCA length is a crucial issue, because a short trunk directly affects surgical and interventional planning.

Conclusions. This cadaveric experiment demonstrates a range of coronary artery dominance and bifurcation patterns with the most common one being the right dominance. There is a large morphometric variability in the lengths, diameters, and distances between the inter-ostial of the main coronary vessels. Such detailed anatomical and quantitative information is critical to advancing the quality of angiographic interpretation, improving the surgical revascularization plan, and training medical professionals on anatomy. The results highlight the need to consider the individual anatomical variants in clinical practice to reduce the risk of intraoperative and peri-procedural injuries.