












The importance of coronary artery visualization in epicardial procedures: risk prevention and the role of specialized nursing training

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Coronary artery visualization plays a crucial role in both epicardial and endocardial procedures, particularly in invasive electrophysiology and structural cardiac interventions. One of the highest-risk procedures is epicardial ventricular tachycardia ablation, where precise imaging of coronary arteries is essential to avoid vascular injury, ischemia, or infarction. Coronary angiography remains the gold standard for preprocedural planning, ensuring safe catheter navigation and targeted ablation. The role of specialized nursing staff in invasive cardiology laboratories is becoming increasingly significant. Nurses trained in electrophysiology and interventional cardiology must possess expertise in coronary angiography, as they play a key role in procedural safety, imaging assistance, and complication management.

Several studies have reported rare but serious complications of coronary injury during epicardial ablations.¹⁻³ In a large cohort of 4655 ablation procedures, the incidence of coronary artery damage was 0.09%, primarily during epicardial procedures. Most injuries involved branches of the right coronary artery (RCA), requiring immediate stenting in cases of acute occlusion. These findings underscore the necessity for real-time coronary imaging to avoid complications. MDCT-derived coronary anatomy integration has been shown to improve safety by identifying high-risk zones before ablation.

With the increasing complexity of invasive cardiac procedures, nurses must be proficient in: recognizing coronary anatomy on angiographic images, assisting in real-time fluoroscopic imaging during epicardial access, ensuring safe catheter navigation to minimize coronary injury, and monitoring for ischemic changes and rapid response to complications. Given the growing differentiation of invasive cardiology teams—covering interventional cardiology, electrophysiology, and structural interventions—a fundamental knowledge of coronary angiography is essential for all nurses.

Coronary artery visualization remains a key safety measure in epicardial electrophysiology and structural interventions. The integration of preprocedural imaging and real-time coronary angiography significantly reduces the risk of complications. In our center, we emphasize the continuous education of nurses in coronary angiography, recognizing their vital role in ensuring procedural success and patient safety. As invasive cardiology continues to evolve, training in coronary imaging techniques must remain a core competency for all healthcare professionals involved in complex cardiac interventions.

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LITERATURE

1. Roberts-Thomson KC, Steven D, Seiler J, Inada K, Koplan BA, Tedrow UB, et al. Coronary artery injury due to catheter ablation in adults: presentations and outcomes. *Circulation.* 2009 Oct 13;120(15):1465-73. <https://doi.org/10.1161/CIRCULATIONAHA.109.870790>
2. Padala SK, Koneru JN, Gertz ZM, Ellenbogen KA. Coronary Artery Laceration During Epicardial Ablation. *JACC Clin Electrophysiol.* 2021 Feb;7(2):273-274. <https://doi.org/10.1016/j.jacep.2020.11.011>
3. van Huls van Taxis CF, Wijnmaalen AP, Piers SR, van der Geest RJ, Schalij MJ, Zeppenfeld K. Real-time integration of MDCT-derived coronary anatomy and epicardial fat: impact on epicardial electroanatomic mapping and ablation for ventricular arrhythmias. *JACC Cardiovasc Imaging.* 2013 Jan;6(1):42-52. <https://doi.org/10.1016/j.jcmg.2012.05.016>