

ADVANTAGES OF INTRAVASCULAR ULTRASOUND INVESTIGATIONS IN PERCUTANEOUS INTERVENTIONS

madhu madhu

Студент (специалист)

Мордовский государственный университет им. Н.П. Огарёва, Медицинский институт,
Саранск, Россия

E-mail: madhufrommrsu@gmail.com

Introduction. Percutaneous coronary intervention (PCI) is widely used in the management of coronary artery disease. However, conventional angiography has limitations in accurately assessing lesion morphology and vessel dimensions. Intravascular ultrasound (IVUS) provides high-resolution cross-sectional imaging, improving procedural precision.

Aim. To evaluate the advantages and clinical significance of intravascular ultrasound in guiding percutaneous coronary interventions.

Materials and Methods. The study is based on the analysis of data from published clinical trials and retrospective studies involving patients who underwent PCI with and without IVUS guidance. The review focuses on the role of IVUS in lesion assessment, stent selection, deployment optimization, and detection of procedural complications.

Results. IVUS allows accurate measurement of vessel diameter and plaque characteristics, leading to appropriate stent sizing and placement. It significantly reduces the incidence of stent underexpansion, malapposition, and edge dissections. IVUS is particularly beneficial in complex lesions such as left main coronary artery disease, bifurcations, chronic total occlusions, and calcified plaques. Additionally, IVUS helps detect complications such as thrombus formation and dissections that may not be visible on angiography. Studies indicate that IVUS-guided PCI is associated with lower rates of major adverse cardiovascular events, including restenosis and stent thrombosis.

Conclusion. Intravascular ultrasound is a valuable adjunct in PCI, offering superior visualization of coronary anatomy and improving procedural outcomes. Despite higher cost and the need for expertise, its use enhances safety, optimizes stent deployment, and reduces long-term complications, making it an essential tool in modern interventional cardiology.