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ABSTRACT

Current and Future Application Virtual, Augmented and Mixed Reality in Cardiacsurgery

P. Wilczek

1Calisia University, Faculty of Health Sciences, Calisia, Poland.

Cardiac surgery has been revolutionized by the integration of virtual, augmented, and mixed-reality (VAMR) technologies. By providing surgeons with comprehensive real-time 3D visualizations of the patient's anatomy during surgery, these technologies enable surgeons to plan, execute, and evaluate minimally-invasive procedures more efficiently and effectively than ever before. VAMR also allows surgeons to simulate the procedure for better understanding and provide improved intraoperative guidance regarding optimal treatment plans. Furthermore, VAMR technologies allow surgeons to personalize surgical treatments for individual patients depending on their individual anatomy and the complexities of their particular condition. Surgeons can also leverage these technologies to improve patient education, provide extra confidence during procedures, and more effectively integrate complex surgical data from multiple imaging modalities. Additionally, the use of augmented and mixed-reality surgical systems can also help reduce surgical training time and improve communication among interventional teams. Overall, the application of virtual, augmented, and mixed-reality technologies in cardiac surgery has proven to be highly beneficial to both the surgical outcomes and the patient experience. This technology can act as an invaluable tool in the effort to improve both accuracy and efficiency in cardiac surgery and will no doubt continue to play a vital role in the future of medicine.