Spine Surgery Assisted by Augmented Reality

A systematic review examines spine surgery literature supporting augmented reality (AR) technology and summarizes its current status in spinal surgery technology. Database search strategies were retrieved from PubMed, Web of Science, Cochrane Library, Embase, from the earliest records to April 1, 2021. Our review briefly examines the history of AR, and enumerates different device application workflows in a variety of spinal surgeries. We also sort out the pros and cons of current mainstream AR devices and the latest updates. A total of 45 articles are included in our review. The most prevalent surgical applications included are the augmented reality surgical navigation system and head-mounted display. The most popular application of AR is pedicle screw instrumentation in spine surgery, and the primary responsible surgical levels are thoracic and lumbar. AR guidance systems show high potential value in practical clinical applications for the spine. The overall number of cases in AR-related studies is still rare compared to traditional surgical-assisted techniques. These lack long-term clinical efficacy and robust surgical-related statistical data. Changing healthcare laws as well as the increasing prevalence of spinal surgery are generating critical data that determines the value of AR technology [1].

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Liu Y, Lee MG, Kim JS. Spine Surgery Assisted by Augmented Reality: Where Have We Been? Yonsei Med J. 2022 Apr;63(4):305-316. doi: 10.3349/ymj.2022.63.4.305. PMID: 35352881.