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Challenges in Surgical Education

Laparoscopic and Robotic Training: A Need to Adapt Surgical Education to Left-Handed Surgeons

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Background: Dexterity-related challenges in medical training are commonly described, but remain largely unaddressed in surgical education. Many left-handed learners either learn to perform clinical, procedural, and surgical skills with their right-hand or must adapt to performing the skill with their dominant hand without direct teaching.

Current Challenges: Although strategies to enhance surgical education for left-handed learners have been described, they often revolve around mentorship with a like-handed surgeon.[1,2] Robotic training, an increasingly common component of surgical residency training, could prove to significantly decrease the impact of laterality on surgical education and performance. Although traditional laparoscopic training is similar to robotic in requiring learners to utilize both hands with proficiency, there remains laterality preference for the actively working hand among both right- and left-handed learners with certain tasks.[3,4]

Need of Innovation: Current training techniques involve simulation-based task-oriented exercises. Laparoscopic skills are assessed with standardized drills as prescribed by the Fundamentals of Laparoscopic Surgery (FLS) examination. Similarly, robotic training modules encompass simulation drills that grade learners based on metrics such as economy of motion, speed, keeping instruments in view, instrument collision, and number of movements. These drills provide actionable information about a learner's performance. With the ease of bimanual dexterity on the surgical robot and prompt feedback, there may be opportunity to translate these skills to similar minimally invasive techniques such as laparoscopy. Through discussions among residents at our program, we discovered a need for improved directed surgical education for left-handed trainees to utilize their dominant hand. By assessing for delta time between the dominant and nondominant hand, we can assess how variability in practice drills differs between laterality among left- and right-hand dominant residents on the robotic console versus during laparoscopic FLS exercises. Further studies will aim to identify actionable metrics to reduce the delta time between the dominant and nondominant hand on both the robotic and laparoscopic platforms.