English Symposium

📅 2025年11月15日(土) 9:50 ~ 11:00 🏛 第10会場

[ESY3] English Symposium 3 Challenges and training in Colorectal surgery

Moderator:William Tzu-Liang Chen(China Medical University Hsin-Chu Hospital), Masafumi Inomata(Oita University)

[ESY3-2] Experience with the Senhance Digital Laparoscopy System (SDLS) in Colorectal Cancer Surgery -Outcomes and Future- Perspectives

Hirofumi Sugita (Saitama Medical University International Medical Center)

The Senhance Digital Laparoscopy System (SDLS) is a surgical support system with haptic feedback that has received approval for 98 types of laparoscopic procedures under the national insurance system. The console is characterized by its openness, and it is equipped with a camera control system that utilizes eye-tracking technology. Additionally, the instruments utilized in this system are reusable and have a thickness of 3 mm, thereby ensuring precision and ergonomics in minimally invasive colorectal surgery. The operational similarity of the latter to conventional laparoscopy allows for a seamless transition from laparoscopic to robotic surgery.

From May 2018 to July 2025, 203 surgical procedures for colorectal cancer were performed with the assistance of the SDLS at our institution. Comparative studies of ileocecal resection and sigmoidectomy have demonstrated equivalent short- and mid-to-long-term outcomes when compared to laparoscopic surgery, confirming the safety of the former. However, operative time tended to be longer with SDLS. To address this, a hybrid strategy was introduced, combining the use of SDLS for precise lymphadenectomy and laparoscopy for mobilization. This approach resulted in enhanced efficiency and reduced operative time.

The Intelligent Surgical Unit (ISU) integrated into SDLS encompasses a range of functions, including "Follow Me," "Go To," "Point to Point 3D Measurement," and "Defect Identification & Sizing." These functions have the potential to support surgeons in a variety of ways. Moreover, the integration of artificial intelligence and machine learning algorithms is expected to reduce disparities in surgical skills. The integration of robotic precision with real-time AI analysis has the potential to enhance both the quality and safety of surgical procedures.

The future challenge lies in advancing these technologies into routine clinical application, thereby promoting the digitalization of surgery with SDLS for the next generation of minimally invasive colorectal surgery.