

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)

[ESY3-1]

AI Surgical Navigation and Research Infrastructur

Tomonori Akagi, Masafumi Inomata (Department of Gastroenterological and Pediatric Surgery, Oita University Faculty of Medicine)

[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)

[ESY3-3]

Challenges and training in Colorectal surgery

Kamales Prasitvarakul (Minimally Invasive Surgery Center Hatyai, Department of Surgery, Hatyai Hospital)

[ESY3-4]

Training the next generation of robotic colorectal surgeons

James Ngu (Department of Surgery, Changi General Hospital)

[ESY3-5]

Challenges and Training in Colorectal Surgery in Thailand

Siripong Sirikurnpiboon (Colorectal Division, General Surgery, Department Rajvithi Hospital)

[ESY3-6]

Colorectal Cancer in Young Adults: Navigating the Clinical and Surgical Challenges

Michael Powar (Cambridge University Hospitals)

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[ESY3-1] AI Surgical Navigation and Research Infrastructur

Tomonori Akagi, Masafumi Inomata (Department of Gastroenterological and Pediatric Surgery, Oita University Faculty of Medicine)

The Department of Gastroenterological and Pediatric Surgery at Oita University School of Medicine is actively promoting the use of AI to support minimally invasive surgery and develop next-generation medical professionals. Through industry-academia collaboration with the Fukuoka Institute of Technology and a private company, we jointly developed an AI navigation system that applies deep learning to laparoscopic surgery footage to automatically identify and display important anatomical landmarks. Clinical validation was successfully completed in 2018. With support from the Ministry of Education, Culture, Sports, Science and Technology (MEXT), we also built a database integrating surgical footage and clinical data. We provide a comprehensive research and education system that combines AI and data science, and have published a variety of research results, including automatic detection of bleeding sites and recognition of inflammation sites in cholecystitis. We are also expanding this system to gastric and colorectal cancer surgery. The department actively encourages young physicians to present and publish their research, with the hope of applying their findings to practical applications. This initiative is positioned as a model case for improving surgical safety and promoting digital transformation (DX) in medicine. At this session, I will report on the department's AI-related efforts.

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[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.

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[ESY3-3] Challenges and training in Colorectal surgery

Kamales Prasitvarakul (Minimally Invasive Surgery Center Hatyai, Department of Surgery, Hatyai Hospital)



Background: Laparoscopic and robotic colorectal (CRC) surgery remain technically demanding due to limited instrument mobility, loss of depth perception, and reduced tactile feedback. These challenges highlight the importance of structured training and careful management of intra-operative complications.

Methods/Experience: This presentation reviews the learning curve and key training elements in laparoscopic CRC surgery, with illustrative videos of intraoperative complications and their management strategies will be demonstrated. Clinical outcomes demonstrate gradual improvement with experience: operative time decreases significantly after ~90 cases, anastomotic leakage rates decline after ~30 cases, and local recurrence rates fall below 10% after ~60 cases. Notably, the learning curve for oncological outcomes is longer than that for achieving safe surgical outcomes.

Discussion: Risk factors for complications arise from both patient and surgeon-related factors. Difficult cases include T4 or bulky tumors, prior midline laparotomy, obesity (BMI > 30), history of pelvic radiation, and low rectal cancer. Early complications and conversion rates depend heavily on surgical experience. To minimize risks, surgeons should: (1) understand pelvic planes and anatomy, (2) follow correct procedural steps, and (3) master stapling techniques for tissue division and anastomosis. Principles such as traction-counter traction, careful retraction, and direct visualization are critical to avoiding incorrect planes. Technical limitations remain in narrow pelvises and in cases of recurrent or previously irradiated disease, where fibrosis complicates venous dissection.

Conclusion: Training programs should acknowledge that complications encountered by fellows often reflect mentors' shortcomings. In colorectal cancer surgery, intraoperative bleeding is not only life-threatening but also associated with anastomotic leakage, infection, and higher local recurrence. Careful preoperative planning, anatomical mastery, and precise surgical technique are essential to reduce complications and improve patient outcomes.

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[ESY3-4] Training the next generation of robotic colorectal surgeons

James Ngu (Department of Surgery, Changi General Hospital)

Surgical training has evolved from the open era to minimally-invasive surgery, with advancements in technique and technology. The needs and attitudes of surgical trainees have also changed over the years. This talk aims to explore the way we provide education and training for our next generation of robotic colorectal surgeons.



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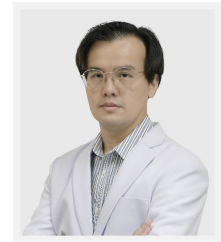
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[ESY3-5] Challenges and Training in Colorectal Surgery in Thailand

Siripong Sirikurnpiboon (Colorectal Division, General Surgery, Department Rajvithi Hospital)



The field of colorectal surgery in Thailand has advanced significantly over the past decade, aligning more closely with international standards. However, it continues to face a unique set of challenges in both training and clinical practice, shaped by the country's healthcare infrastructure and resource distribution.

1. Training Pathway: A Structured Approach

- Foundation: After medical school (MD), surgeons complete a 4-year residency in General Surgery.
- Specialization: Subsequent competitive 2 years Fellowship in Colorectal Surgery, primarily offered by major tertiary hospitals in Bangkok
- Curriculum: Covers colorectal cancer, anorectal disease, benign colorectal disease, IBD and functional anorectal. And also in techniques in laparotomy, laparoscopic, endoscopy and increasingly, robotic-assisted surgery.

Certification: Regulated and examined by the Royal College of Surgeons of Thailand.

2. Key Strengths & Advancements

- High-Volume Exposure: Trainees gain significant hands-on experience in large public hospitals.
- International Standards: Leading programs align with global benchmarks and participate in international societies.
- Adoption of MIS: Laparoscopic surgery is now a standard and essential skill for all trainees.
- Multidisciplinary Care: Growing emphasis on MDT meetings and ERAS protocols to improve patient outcomes.

3. Major Challenges

- Centralization of Resources: Advanced training, technology, and expertise are concentrated in Bangkok, creating a significant gap in care and training access for rural and regional areas.
- Technological & Budgetary Constraints: High-cost technology (e.g., robotic systems) is available only in a few elite institutions due to budget limitations of the Universal Coverage Scheme (UCS).
- Workforce "Brain Drain": Highly skilled surgeons are often attracted to better-compensated positions in the private sector or abroad, depleting the public health system.
- High-Pressure Environment: Extremely high patient volumes in training hospitals can strain educational time, prioritizing service over dedicated learning in some instances.

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[ESY3-6] Colorectal Cancer in Young Adults: Navigating the Clinical and Surgical Challenges

Michael Powar (Cambridge University Hospitals)

The presentation will outline the challenges faced by the rising tide of early onset colorectal cancer in young adults.

Data will be presented on epidemiological trends and the scale of the problem in the West and East.

The presentation will cover the following challenges.

Diagnostic Delay

Agressive tumour biology

Treatment goals

Surgical & technical considerations

Patients's goals / Survivorship

