


Comment on: Environmental sustainability in robotic and laparoscopic surgery: systematic review

Chao-Ming Hung^{1,2}, Kuo-Chuan Hung^{3,4}, Po-Huang Lee^{5,6}, Kang Lu^{2,7,8}, Meng-Che Hsieh^{5,9} and Chong-Chi Chiu^{1,2,10,*} 

¹Department of General Surgery, E-Da Cancer Hospital, Kaohsiung, Taiwan

²School of Medicine, College of Medicine, I-Shou University, Kaohsiung, Taiwan

³Department of Anesthesiology, Chi Mei Medical Center, Tainan, Taiwan

⁴Department of Hospital and Health Care Administration, College of Recreation and Health Management, Chia Nan University of Pharmacy and Science, Tainan, Taiwan

⁵College of Medicine, I-Shou University, Kaohsiung, Taiwan

⁶Department of General Surgery, E-Da Hospital, Kaohsiung, Taiwan

⁷Department of Neurosurgery, E-Da Cancer Hospital, Kaohsiung, Taiwan

⁸Department of Neurosurgery, E-Da Hospital, Kaohsiung, Taiwan

⁹Department of Hematology & Oncology, E-Da Cancer Hospital, Kaohsiung, Taiwan

¹⁰Department of Medical Education and Research, E-Da Cancer Hospital, Kaohsiung, Taiwan

*Correspondence to: Chong-Chi Chiu, P.O. Box 174 Shanhua, Tainan City 74199, Taiwan (e-mail: chiuchongchi@gmail.com)

Dear Editor

Papadopolou *et al.* discussed the 'environmental sustainability' issue of three different surgical techniques¹.

There has been an increasing trend of robotic surgery worldwide in recent decades. Enthusiasts claim that the robotic system provides a magnified three-dimensional view, improved ergonomics, and upgraded dexterity. However, patient-centric outcomes like rapid postoperative recovery, fewer complications, fewer morbidities, and less mortality have not been proven to be more remarkable than laparoscopic or open surgery. For example, the ROLARR randomized clinical trial failed to show the advantages of robotic surgery over other approaches in rectal cancer management, and Ramirez *et al.*² even demonstrated a possibly worse prognosis in early-stage cervical cancer surgeries. Many studies have not demonstrated significantly different outcomes after colectomy or cholecystectomy with these three techniques. This disparity between the rapid acceptance of robotic surgery and ambiguous clinical benefits emphasizes the urgency of comprehensive individual judgements and decisions on suitable surgical techniques for various diseases.

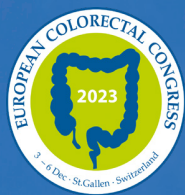
Contrary to traditional laparoscopic instruments, and owing to their high cost, robotic instruments are designed for a maximum number of repeated uses. In a retrospective study of endometrial cancer management, Woods *et al.*³ found that a laparoscopic procedure yielded more single-use device waste (29.7 per cent of total waste) than robotic (16.7 per cent) and open (9.7 per cent)

techniques, with the same ratio of carbon dioxide equivalents. Repeated use of instruments should be the main reason for less waste in robotic procedures than in laparoscopic alternatives, which Papadopolou *et al.* also reported.¹ However, these instruments must be sterilized thoroughly, because failure to sterilize them can lead to severe cross-contamination and infections. Residual bioburden and soils will cause instrument malfunctions, damage, and subsequent patient injuries or surgical delays.

For these reasons, we assume that future environmental sustainability studies in health care will consider strategies to lessen the environmental effects while improving patient safety, quality of care, and cost-effectiveness.

References

1. Papadopolou A, Kumar NS, Vanhoostenberghe A, Francis NK. Environmental sustainability in robotic and laparoscopic surgery: systematic review. *Br J Surg* 2022;**109**:921–932
2. Ramirez PT, Frumovitz M, Pareja R, Lopez R, Vieira M, Ribeiro R *et al.* Minimally invasive versus abdominal radical hysterectomy for cervical cancer. *N Engl J Med* 2018;**379**:1895–1904
3. Woods DL, Mcandrew T, Nevadunsky N, Hou JY, Goldberg G, Kuo DYS *et al.* Carbon footprint of robotically-assisted laparoscopy, laparoscopy and laparotomy: a comparison comparative study. *Int J Med Robot* 2015;**11**:406–412



European Colorectal Congress

3 – 6 December 2023, St.Gallen, Switzerland

OVERVIEW

Sun, 3 Dec 2023

MASTERCLASS

PROCTOLOGY DAY

ROBOTIC COURSE

DAVOSCOURSE@ECC

SCIENTIFIC PROGRAMME

Mon, 4 Dec – Wed, 6 Dec 2023

DIVERTICULAR DISEASE

Gut microbiome and surgery

Phil Quirke, Leeds, UK

Diet in diverticular disease

Pamela Buchwald, Lund, SE

Decision making in the management of acute complicated Diverticulitis beyond the guidelines

Seraina Faes, Zurich, CH

Diverticular Abscess – Always drainage or who benefits from Surgery?

Johannes Schultz, Oslo, NO

Perforated Diverticulitis: Damage Control, Hartmann's Procedure, Primary Anastomosis, Diverting Loop

Reinhold Kafka-Ritsch, Innsbruck, AT

When to avoid protective stoma in colorectal surgery

Antonino Spinelli, Milano, IT

ENDOMETRIOSIS

Endometriosis – what is the role of the abdominal surgeon

Tuyman Juriaan, Amsterdam, NL

Challenges in Surgery of Endometriosis – always interdisciplinary?

Peter Oppelt, Linz, AT; Andreas Shamiyeh, Linz, AT

A gaze in the crystal ball: Where is the role of virtual reality and artificial Intelligence in colorectal surgery

Müller Beat, Basel, CH

MALIGNANT COLORECTAL DISEASE

Cytoreductive Surgery

and Intraperitoneal Chemotherapy – facts and hopes

Michel Adamina, Winterthur, CH

Metastatic Colorectal Cancer – surgical approaches and limits

Jürgen Weitz, Dresden, DE

Extended lymph node dissection for rectal cancer, is it still under debate?

Miranda Kusters, Amsterdam, NL

Organ preservation functional outcome in rectal cancer treatment – in line with patient's needs? (Robot – laparoscopic – open surgery?)

Hans de Wilt, Nijmegen, NL

ROBOTICS

Advances in Robotic Surgery and what we learnt so far

Parvaiz Amjad, Portsmouth, UK

Challenging the market: Robotic (assistant) Devices and how to choose wisely (Da Vinci – Hugo Ras – Distalmotion ua)

Khan Jim, London, UK

TAMIS - Robotic Transanal Surgery, does it make it easier?

Knol Joep, Genk, BE

Live Surgery – Contonal Hospital of St.Gallen

Walter Brunner, St.Gallen, CH;

Salvatore Conde Morales, Sevilla, ES;

Friedrich Herbst, Vienna, AUT;

Amjad Parvaiz, Portsmouth, UK

Video Session

Lars Pahlmann Lecture

Markus Büchler, Lisboa, PRT

Honorary Lecture

Bill Heald, Lisboa, PRT

Information & Registration www.colorectalsurgery.eu