Safe Introduction and Standardization of the Japanese Robotic System ***hinotori*** in Colon Cancer Surgery

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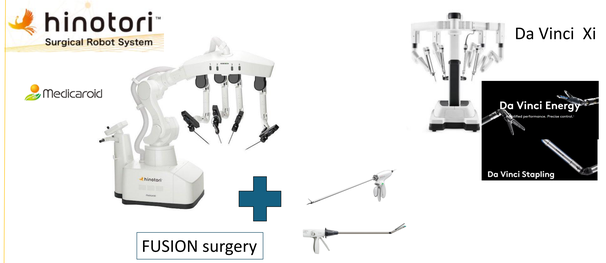
Disclosures
The authors have no conflicts of interest to disclose.

Introduction

◆Our department introduced robotic rectal surgery with the DaVinci Xi in December 2018 and extended its use to colon surgery in March 2023. In February 2025, we adopted *hinotori*, the first Japanese surgical robot, as a second robotic platform for colon cancer surgery.

◆Here, we compared surgical outcomes of DaVinci and *hinotori* colon resections to evaluate the feasibility and safety of introducing this novel platform.

Features of hinotori



◆ Because *hinotori* lacks integrated energy devices and staplers, we standardized a so-called "**fusion surgery**," in which laparoscopic devices were consistently used even during DaVinci procedures.

◆This strategy minimized technical differences between the two systems and enabled a smooth transition.

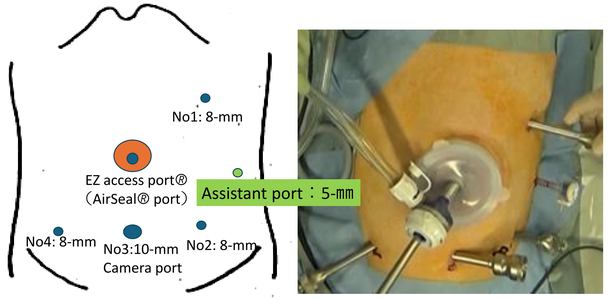
Methods

◆Between March 2023 and August 2025, 32 robotic colon resections were performed in our department.

◆Patients were divided into two groups: hinotori (n=7) and DaVinci (n=25).

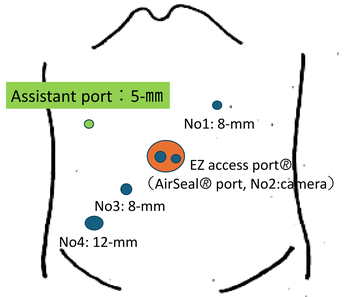
◆Perioperative outcomes including operative time, blood loss, postoperative hospital stay, and complications were analyzed.

Robotic Port Placement for Rigt Colectomy



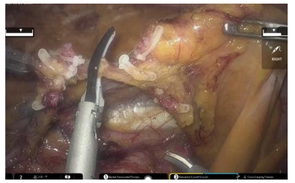
Surgical Procedure

Robotic Port Placement for Left Colectomy



Surgical procedure for Left Colectomy

Assistant-assisted exposure of the IMA using atraumatic forceps for optimal countertraction.



Vascular division performed with LCS by the assistant.

Mesenteric division using LCS by the assistant.

Intestinal transection performed with a linear stapler by the assistant.

Patient characteristics

	hinotori n = 7	DaVinci Xi n =25	P value
Gender Male/Femal	5 / 2	13 / 12	N.S.
Age,yeas (range)	74 (53-81)	76 (45-87)	N.S.
BMI (Body mass index)	23.4 (18.6-28.4)	23.5 (15.3-31.2)	N.S.
Tumor location (Right colon / Left colon)	4 / 3	15 / 10	N.S.
Tumor size (mm)	40 (20-70)	35 (15-55)	N.S.

Operative results

	hinotori n = 7	DaVinci Xi n =25	P value
Total operative time(min)	238(183-268)	262(158-517)	N.S.
Console time(min)	120(96-148)	137(72-248)	N.S.
Intraoperative blood loss(ml)	0(0-40)	8.5(0-200)	N.S.
Extent of lymph node dissection (D2/D3)	1 / 6	6 / 19	N.S.
Post-operative hospital stay(day)	7(6-8)	9(6-20)	P=0.016
Post-operative complications (Grade II / III)	0/0	2/1	N.S.

Discussion

◆hinotori is a newly developed Japanese surgical robot approved for colorectal surgery in Japan in 2022.

◆Early clinical reports have shown that colorectal surgery using hinotori is feasible and safe, with outcomes comparable to existing robotic systems.

◆However, dedicated robotic energy devices and staplers are currently limited in the hinotori system.

◆In this study, we standardized a "fusion surgery" strategy, using laparoscopic devices even during DaVinci procedures to maintain the same surgical workflow.

◆This approach reduced technical differences between platforms and enabled a smooth transition to hinotori.

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Conclusion

Our experience suggests that *hinotori* can be safely applied to colon cancer surgery when supported by standardized techniques, and highlights the feasibility of introducing alternative robotic systems beyond DaVinci.