



Stoma-site Restorative Colorectal Surgery with the da Vinci SP System: Initial Clinical Experience

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Background

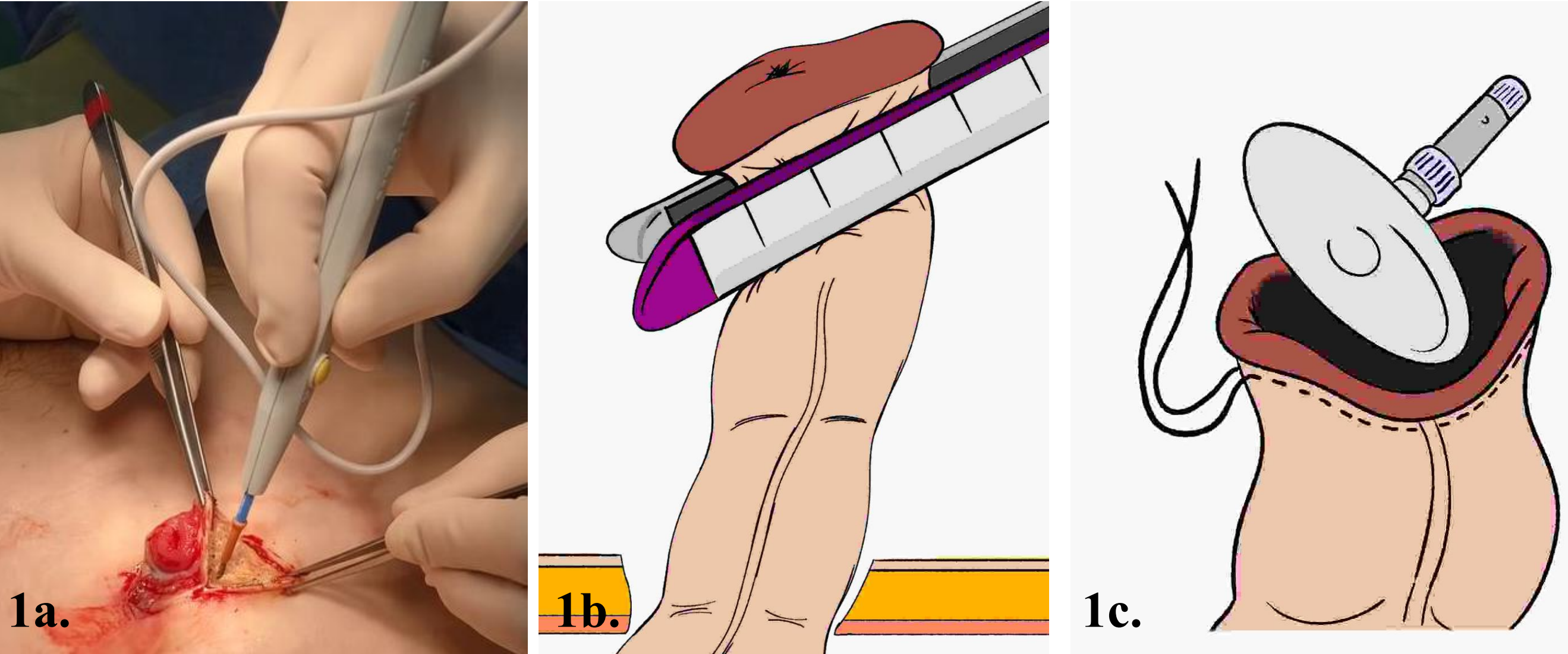
Stoma reversal following emergency colorectal surgery remains technically challenging because of dense adhesions and distorted anatomy in a reoperative abdomen. Although minimally invasive approaches improved perioperative outcomes, single-port laparoscopy is limited by restricted triangulation and instrument crowding. The recent advent of the da Vinci Single-Port (SP) robotic system has introduced potential advantages in managing such complex cases with single-incision. This study evaluated the feasibility and early perioperative outcomes of stoma-site restorative colorectal surgery using the da Vinci single-port (SP) robotic platform.

Study design

January 2023 ~ December 2024, Single tertiary center
6 patients who underwent SP robotic restorative colorectal surgery via the previous stoma site: patients with colorectal cancer excluded
Perioperative outcomes and 30-day complications were analyzed

Surgical Technique

1. Circumferential mobilization and dissection of the previous stoma followed by transection at the mucocutaneous junction using a linear stapler or anvil insertion in advance for circular stapling anastomosis planned later.

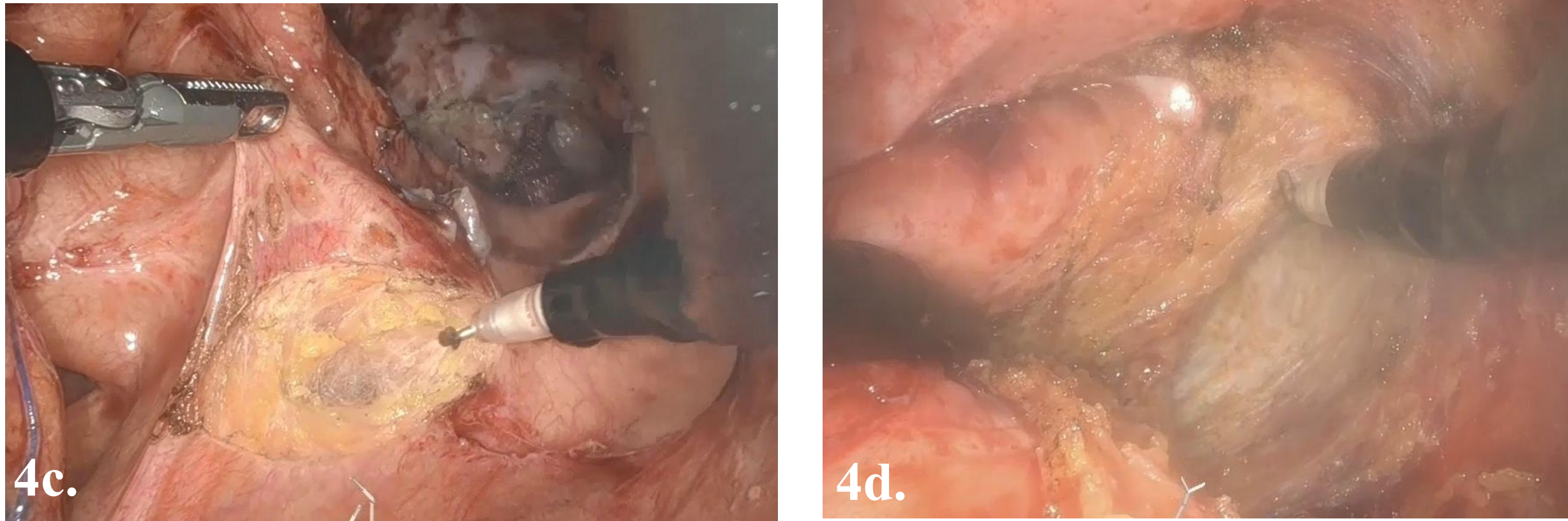
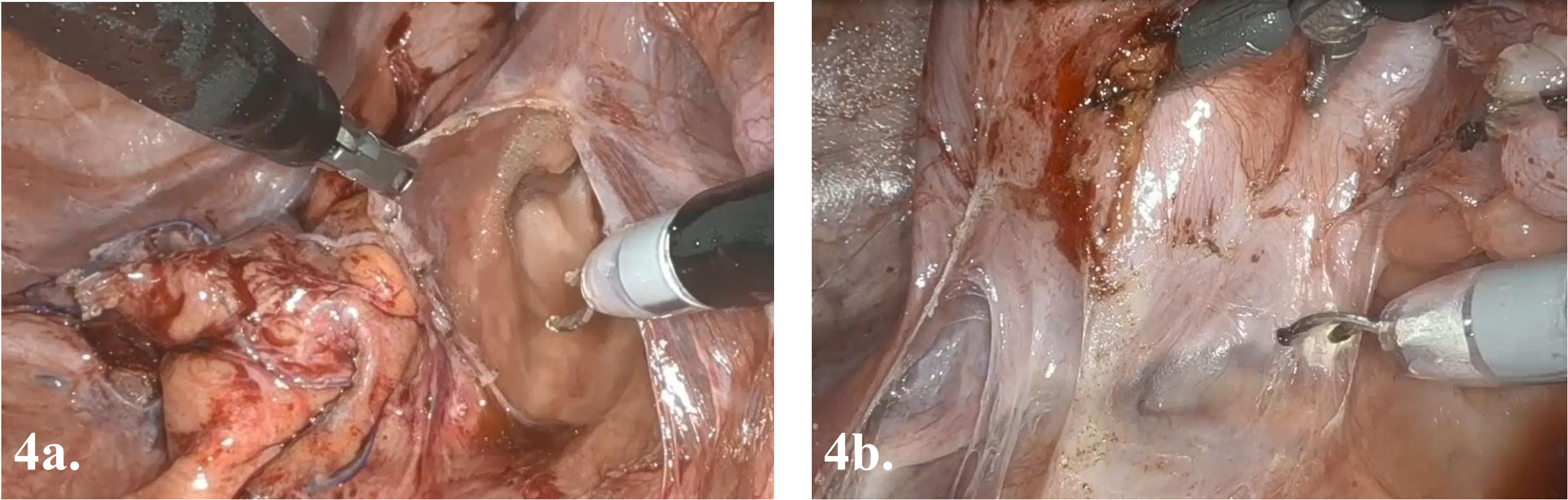


2. Gently tracing around the peristomal area with finger for securing the docking point without adhesions and insertion of the single-port device (Lapsingle Vision SP®).

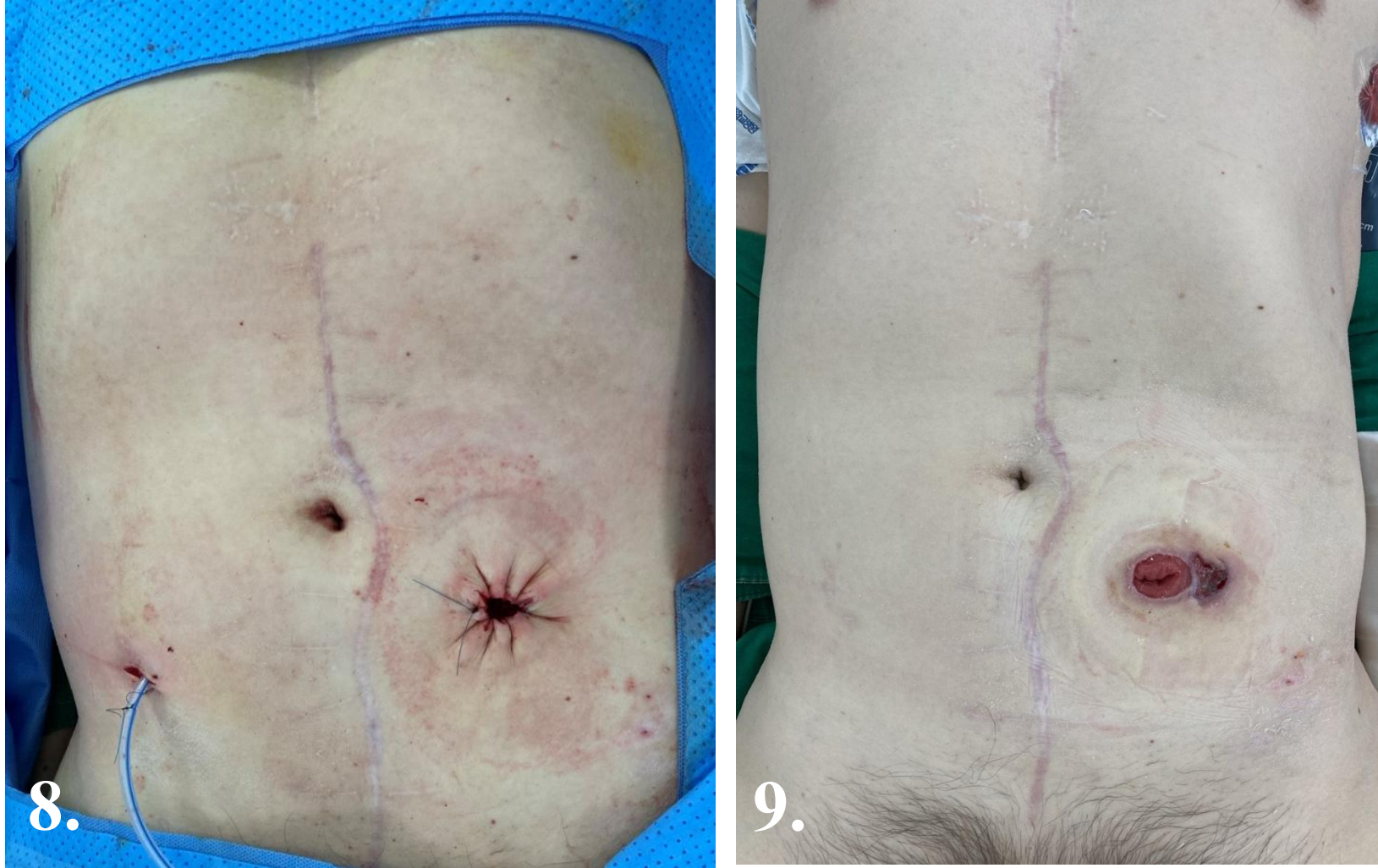
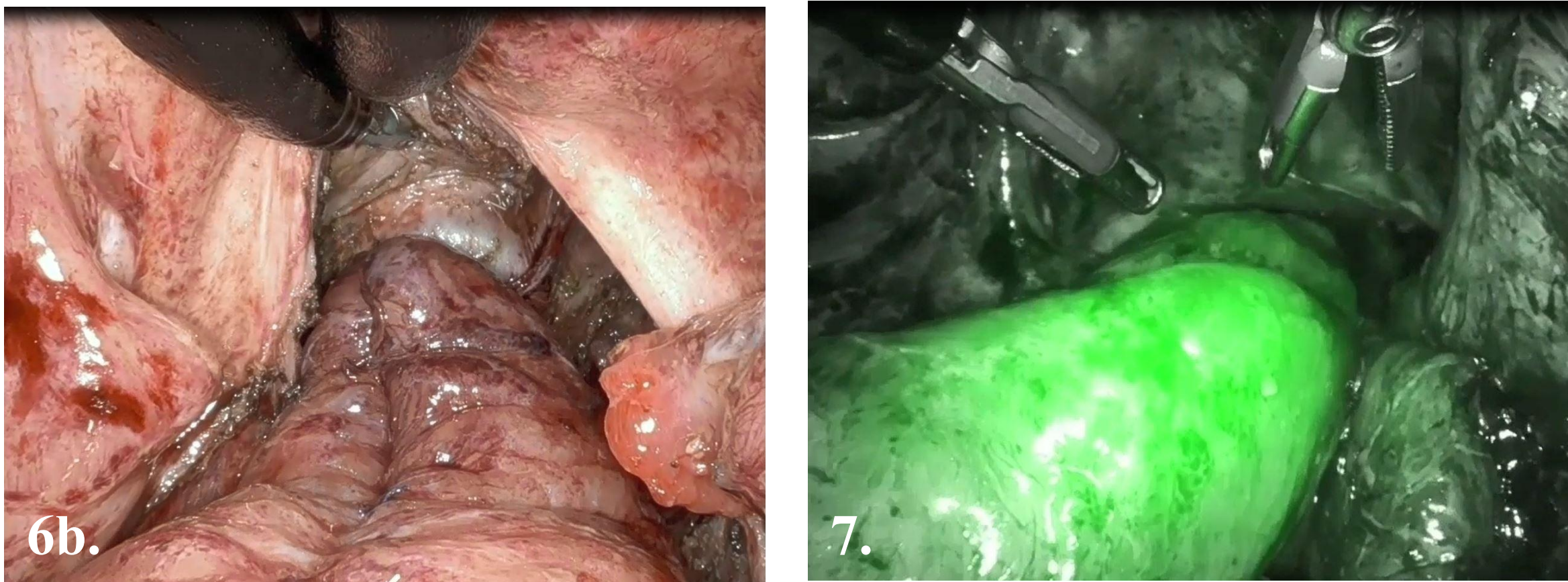
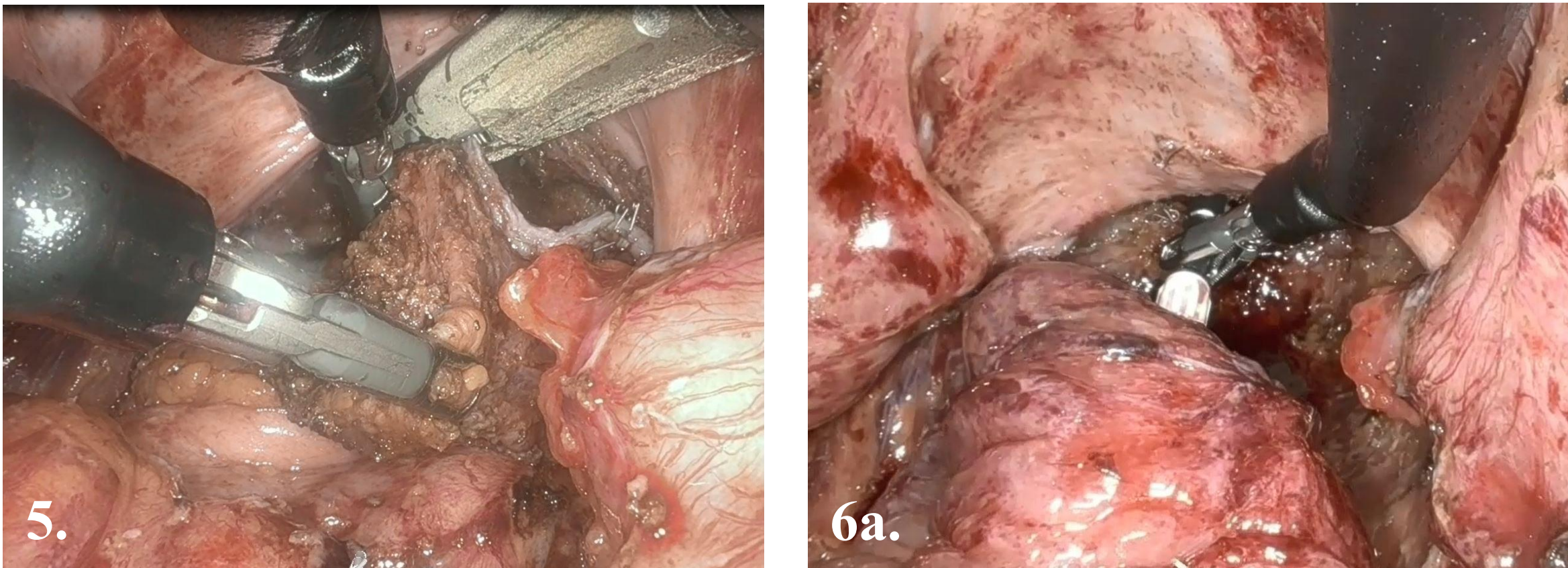
3. Docking of the da Vinci SP robotic system from the patient’s right side → Stoma-site access and docking setup: This setup allows entry into the peritoneal cavity without new abdominal incisions and facilitates stable triangulation in adhesive fields.



4. Adheiolysis followed by identification of the rectal stump and further adhesiolysis from the uterus: The SP system enables precise dissection and visualization in a confined reoperative pelvis.



5. Resection of the remnant rectum using a linear stapler through the assistant channel.
6. Double-stapling technique using a transanal circular stapler after robotic mobilization.
7. Perfusion check of the anastomotic site using indocyanine-green fluorescence under near-infrared mode.
8. Layered closure of the stoma site: purse-string suture for skin closure
9. Previous abdominal wounds and stoma



Results

Outcomes	Median results
Operative time (minute)	287.5 (135-600)
Estimated blood loss (ml)	25 (5-400)
Intraoperative complications	1 (16.7%): Small bowel injury requiring resection
Postoperative complications: Clavien Dindo classification	1 (16.7%): IIIa: intra-abdominal abscess requiring PCD insertion
Wound complications	0
Open conversion	0
30-day readmission	0
Mortality	0

Case	Age (years)	Sex	BMI (kg/m ²)	ASA class	Previous diagnosis	Previous operation	Procedure
A	78	M	29.2	3	Ischemic colitis	Hartmann's procedure	SP-HR
B	44	M	24.3	2	Perforated sigmoid diverticulitis	Hartmann's procedure	SP-HR
C	69	F	20.9	3	Ischemic colitis	Hartmann's procedure	SP-HR
D	76	F	20.3	3	Sigmoid colon perforation	Laparoscopic Hartmann's procedure	SP-HR +SBR
E	19	F	20.1	3	UC with transverse colon perforation	Total colectomy + end ileostomy	SP-completion TPC + IPAA
F	49	M	24.9	3	Traumatic descending colon transection	Hartmann's procedure	SP-HR

Conclusions

In selected patients undergoing stoma reversal after emergency colorectal resection, the SP robotic approach through the previous stoma site was feasible and enabled safe reconstruction with no open conversions and acceptable morbidity in this early experience. Larger prospective and comparative studies needed for optimal indications and long-term outcomes.