Robotic total colectomy and ileorectal anastomosis

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The benefits of minimally invasive approaches in colorectal surgery have been well demonstrated. However, some hesitancy remains with regards to the utilization of the robotic platform for total colectomies, mostly due to the perceived need for multiple re-dockings in multiquadrant surgery. This video aims to demonstrate how the robotic platform can be efficiently utilized in multiquadrant surgery without the need for multiple re-dockings, as well as some tips on how to overcome the potential challenges that may be encountered during this procedure.

Keywords: Robotic surgical procedures; Colectomy; Minimally invasive surgical procedures

Minimally invasive approaches in colorectal surgery have been associated with shorter hospitalization periods, lower intraoperative blood loss, quicker return of gut function, and lower postoperative analgesia requirements when compared with open surgery [1]. In addition, robotic assistance with the Da Vinci Xi platform (Intuitive Surgical Inc) in minimally invasive total abdominal colectomy has also been shown to be safe and feasible [2].

Some hesitancy remains regarding the utilization of robotic platforms for total colectomy, mostly due to the perceived need for multiple re-dockings in multiquadrant surgery [3, 4]. However, emerging evidence supports the contrary position, with a recent series demonstrating that robotic total colectomy was associated with shorter mean operative times than conventional laparoscopy, although the difference was not statistically significant [3].

In this video, we describe how total abdominal colectomy and intracorporeal ileorectal anastomosis can be achieved with a single re-docking of the Da Vinci Xi platform and scope inversion, for a patient with recurrent lower gastrointestinal bleeding due to colonic diverticular disease (Supplementary Video 1). The patient was placed in the Lloyd-Davies position. The robotic port placement are demonstrated in Supplementary Fig. 1. A Pfannenstiel incision was made, and a wound protector was placed within. A 12-mm laparoscopic port was placed into the wound protector, and pneumoperitoneum was established. Four robotic ports were inserted in a linear fashion. The patient cart was docked from the patient's left and targeted towards the hypochondrium for the first stage of the operation, involving left colonic mobilization and ligation of the left colic artery, inferior mesenteric veins, and middle colic vessels. Prior to the second stage of the operation, which involved mobilization of the remaining colon proximally as well as ligation of the ileocolic vessels, the patient cart was re-docked and the overhead boom was rotated towards the right hypochondrium. The final phase of the operation involved the formation of an ileorectal anastomosis and enterocolotomy closure. This was achieved through scope inversion and manual reconfiguration of the robotic arms in order to avoid the need for re-docking. The specimen was extracted through the Pfannenstiel incision. The total operative time was 235 minutes, with 12 minutes and 15 seconds taken for re-docking. The estimated total operative blood loss was 10 mL. The patient had an uneventful recovery and was
discharged home on postoperative day 4.

Improved robotic platforms enable multiquadrant abdominal surgery without the need for multiple re-dockings, and patients benefit from the minimally invasive approach and reduced trauma. This approach can be adopted for both benign and malignant indications to include central vascular ligation and complete mesocolic excision where indicated.

**Ethics statement**

Ethical approval was not required for this study in accordance with local guidelines in Singapore. Informed consent for publication of the research details and clinical images was obtained from the patient.

**ARTICLE INFORMATION**

**Conflict of interest**

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**Author contributions**

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**Supplementary materials**

**Supplementary Fig. 1.** Robotic port placement.

**Supplementary Video 1.** Robotic total colectomy and ileorectal anastomosis.

Supplementary materials are available from https://doi.org/10.3393/ac.2024.00066.0009.

**REFERENCES**