



Original research

Comparing robotic surgery with laparoscopy and laparotomy for endometrial cancer management: A cohort study



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HIGHLIGHTS

- Robotic surgery has been applied in managing various types of gynecologic cancers.
- Robotic surgery showed favorable short-term results in treating endometrial cancer.
- Robotic surgery showed similar complication rate to laparoscopy and laparotomy.
- Robotic surgery showed comparable survival outcomes to laparoscopy and laparotomy.

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ABSTRACT

Introduction: Robotic surgery has been applied in managing various types of gynecologic cancers. The purpose of this study is to compare the surgical outcomes of robotic surgery, laparoscopy and laparotomy for managing endometrial cancer. **Methods:** A total of 365 patients received surgical staging for treating IA to IIIC endometrial cancer were retrospectively enrolled. Patient demography, peri-operative parameters, and survival outcomes were studied. **Results and discussions:** Robotic surgery showed a significant lower blood loss and 24-h pain score as compared to other surgical types. Moreover, compared to laparotomy, robotic and laparoscopic surgeries were associated with reduced operation time, decreased time to full diet resumption, and shortened hospital stay. No significant differences were found between the groups in terms of overall complication rate. Eighteen-month follow-up of the patients indicated no significant differences in disease-free survival and overall survival. **Conclusion:** Compared to conventional approaches, robotic surgery showed favorable short-term outcomes with comparable survival. It is suggested that robotic surgery is a feasible tool for endometrial cancer management.

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1. Introduction

To date, robotic surgery system has been applied in various types of surgeries. For gynecologic cancer management, recent reports have suggested the role of robotic surgery in treating cervical cancer [1–3], endometrial cancer [4–8], early stage and local

recurrent ovarian cancer [9,10]. Robotic surgery showed shortened hospital stay, decreased blood loss, and lower transfusion rates of the patients for treating stage IA to IIB cervical cancer [1,2,11–13]. Other reports also demonstrated that robotic approach is found to associate with lower blood loss, shorter hospital stay, fewer major complications, higher lymph node yield, and lower laparotomy conversion in treating endometrial cancer patients [6–8,14,15]. However, large perspective study is still lacking.

In our prior work, we elucidated surgical outcome of robotic surgery for treating stage IA to IIB cervical cancer. The data indicated that robotic surgery has favorable short-term surgical results without compromise of the survival [13]. In this current study, we further examined the peri-operative parameters as well as 1.5-year

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survival of endometrial cancer patients received robotic, laparoscopic, and laparotomy staging surgery. As perspective data is still lacking, by comparing short-term surgical performance also long term results, the feasibility of robotic surgery in managing endometrial cancer were further elucidated in this current study.

2. Materials and methods

This study was conducted in compliance with the protocol approved by the Joint Institutional Review Board of Taipei Medical University (TMUJIRB-201301048). A total of 377 endometrial cancer cases were done grouped and retrospective analyzed by medical chart review. The period of enrollment for the laparoscopic and laparotomy group was from 2005 to 2013; and the period of enrollment for the robotic group was from 2011 to 2013, due to that the robotic surgical system was available in our hospital since 2011. All enrolled cases had their pathological diagnosis confirmed before operation, and received complete surgical staging procedures by one surgeon in single center. The inclusion criteria were endometrial cancer with disease staging between FIGO stage IA to IIIC, without preoperative brachytherapy or chemotherapy.

Patient demography including age, BMI, disease stage, histologic type, and prior surgical histories were examined for each cohort. Peri-operative parameters including blood loss, operation time, hemoglobin level, lymph node yield, surgical stress, laparotomy conversion, postoperative pain score, time to full-diet resumption, and hospital stay were compared between groups. Blood loss was defined as the total volume of suctioned fluids. The operative time was measured from the time of skin incision until all surgical staging procedures were completed. Surgical stress was defined as the ratio of intra-operative mean arterial pressure (MAP) to pre-operative baseline MAP, which is closely associated with the

physical stress induced by surgical procedures during the operation [16,17]. All patients received pain control with patient-controlled analgesia (PCA) or non-steroidal anti-inflammatory drugs (NSAIDs) during postoperative care. Postoperative pain scores were obtained 24-h after the operation. All the pain score data were measured using the adult pain score numerical rating scale (0–10). Time for full diet resumption was defined as postoperative days until the patients could tolerate solid food. Patients admitted two days before the operation day for colon preparation and pre-operative CT examination. Hospital stay was defined as the number of postoperative days until discharge. For long-term surgical outcomes, perioperative complications according to Clavein–Dindo classification and survival outcomes were analyzed for each cohort as well.

For static analysis, all obtained data were analyzed using SPSS statistics (version 21.0, IBM). The descriptive analysis including the mean, standard deviation (SD), median, and range of each perioperative parameter were reported and presented as mean \pm SD. The statistical analysis was performed with One-way ANOVA and Turkey HSD post-hoc analysis, and a *p* value of less than 0.05 was considered statistically significant between the groups.

3. Results

Fig. 1 showed the inclusion flow chart of this study. Based on the pathological report as endometrial cancer, 377 women were reviewed for their medical records in this study. Patients received complete surgical staging procedures, which consisted of ascites cytology, bilateral salpingo-oophorectomy, bilateral pelvic lymph node dissection, and total hysterectomy, were included in this study. For patients with disease in advanced stages, paraaortic lymph node dissection was also included for staging procedure.

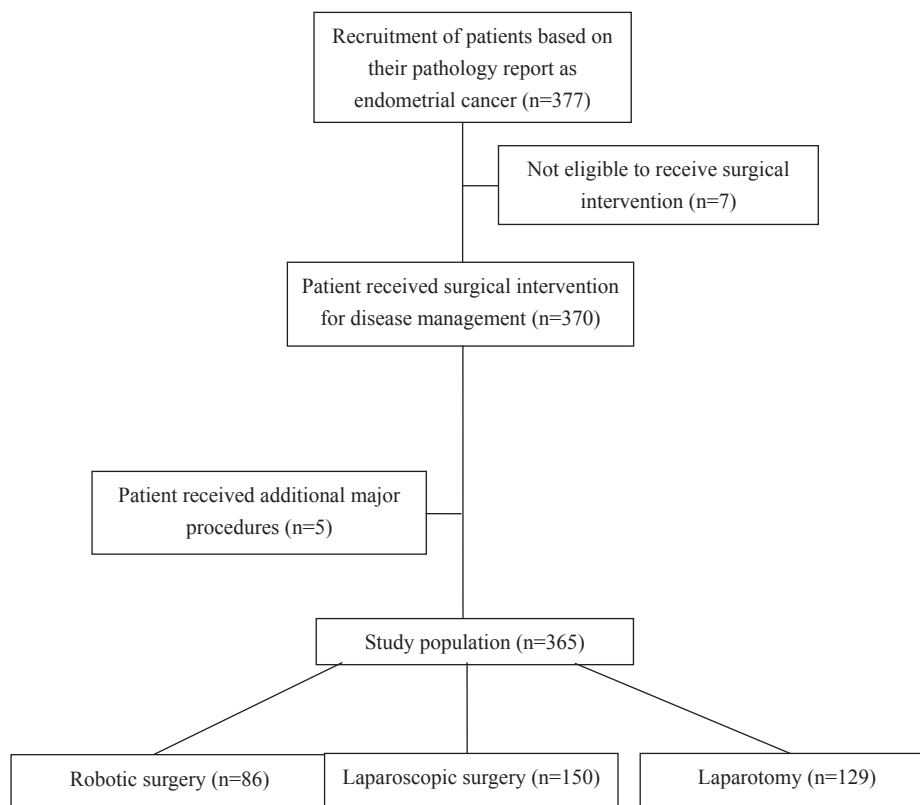


Fig. 1. Inclusion flowchart of all enrolled patients.

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