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Original Article

Is preoperative bowel preparation necessary for gynecological oncology surgery?



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ABSTRACT

Objective: We investigated the necessity of preoperative bowel preparation for gynecological oncology surgery.

Materials and Methods: We retrospectively reviewed the medical records of patients who underwent gynecological oncology surgery with simultaneous colon or rectal resection between April 2005 and September 2014 at the Tri-Service General Hospital, Taipei, Taiwan. Patients were divided into two groups based on whether preoperative mechanical bowel preparation (MBP) was performed. Patient characteristics, including duration of antibiotic treatment, surgical procedures, and occurrence of surgical and nonsurgical complications, were compared.

Results: We enrolled 124 patients who underwent gynecological oncology surgery with simultaneous colon or rectal resection, of whom 76 received MBP and 48 did not receive mechanical bowel preparation. On comparison between the two groups, no significant differences were noted in the assessed patient characteristics, including mean age ($p = 0.61$), Federation of Gynecology and Obstetrics stage ($p = 0.9$), American Society of Anesthesiologists grade ($p = 0.9$), body mass index ($p = 0.8$), and residual tumor size ($p = 0.86$). Furthermore, duration of antibiotic treatment ($p = 0.97$), surgical procedures ($p = 0.99$), and total hospital days ($p = 0.75$), were not different between groups. The risk of surgical ($p = 0.78$) or nonsurgical ($p = 1.0$) complications was not significantly higher in the non-MBP group than in the MBP group.

Conclusion: MBP provides no significant benefit during gynecological oncology surgery. Thus, preoperative MBP is not essential before gynecological oncology surgery and can be omitted.

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Introduction

Traditionally, mechanical bowel preparation (MBP) is suggested before gastrointestinal and gynecological oncology surgery due to the risk of colon or rectal perforation caused by severe adhesion over the pelvis or advanced stages of ovarian, uterine, or cervical

carcinoma. For more than a century, our hospital has recommended preoperative MBP. Salani et al [1] reported that locally advanced ovarian carcinoma involving the rectosigmoid colon is associated with a high incidence of mesenteric nodal metastasis, and that because the rectosigmoid colon is the portion of the gastrointestinal tract most frequently involved with gynecological tumors, survival rate improves with optimal cytoreduction. Hence, more extensive procedures, such as bowel resection, may be required if locally advanced ovarian carcinoma is noted. If the surgical objective is complete cytoreduction of occult nodal disease, the standard surgical technique should include sigmoid mesolectomy with resection of associated lymphatic tributaries during rectosigmoid

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colectomy [1]. Theoretically, preoperative MBP may decrease fecal bacteria, thereby lowering the risk of infection, postoperative anastomotic leakage, and intra-abdominal abscess. However, this has not been scientifically proven, and many studies have questioned the necessity of MBP. For example, in one previous report, Fanning et al [2] stated that preoperative MBP did not lower the risks of anastomotic leakage and infection, and suggested that MBP could be omitted. Few reports have investigated the necessity of MBP in patients undergoing gynecological oncology surgery with simultaneous colon or rectal resection. Therefore, in this study, we retrospectively reviewed the medical records of patients who underwent gynecological oncology surgery with simultaneous colon or rectal resection at our hospital to better elucidate the necessity of MBP.

Materials and methods

This retrospective study was carried out in the Division of Colon and Rectum, Department of Surgery, and Department of Obstetrics and Gynecology at the Tri-Service General Hospital, Taipei, Taiwan. The medical records of 124 patients who had undergone tumor-debulking surgery for gynecological cancer (ovarian, uterine, cervical or endometrial) with simultaneous colon or rectal resection between April 2005 and September 2014 were reviewed. Patients who had undergone only repair of the colon or rectum were excluded. Among these 124 patients, 76 received MBP and 48 did not receive MBP (NMBP) based on the surgeon's decision. The MBP group received bowel preparation including clear liquid diet combined with oral laxatives, such as sodium phosphate, 24 hours before surgery. Retrograde enemas using 500 mL warm water were also performed in the evening before surgery and early in the morning on the day of surgery. On the day before surgery, perioperative prophylactic oral antibiotics, including neomycin and erythromycin (1 g every 6 hours for 3 doses), were administered. On the day of surgery, intravenous cephalosporin was administered 1 hour before incision. Postoperative cephalosporin was maintained according to the patient's status and the physician's decision.

Patient characteristics, including mean age, International Federation of Gynecology and Obstetrics (FIGO) stage, American Society of Anesthesiologists (ASA) grade, body mass index (BMI),

Table 1
Patient characteristics.

Variable	MBP (n = 76)	No MBP (n = 48)	p
Mean age, y (SD)	57.4 (10.0)	56.4 (10.4)	0.61
FIGO stage			0.90
IIIA	1 (1.3)	0	
IIIB	1 (1.3)	1 (2.1)	
IIIC	58 (76.3)	35 (72.9)	
IV	16 (21.1)	12 (25.0)	
ASA grade			0.90
1 or 2	64 (84.2)	40 (83.3)	
3	12 (15.8)	8 (16.7)	
BMI (kg/m ²)			0.80
< 24	41 (59.3)	24 (50.0)	
24–27	15 (19.7)	13 (27.1)	
27–30	8 (10.5)	5 (10.4)	
≥ 30	12 (15.8)	6 (12.5)	
Residual tumor			0.86
0 cm	23 (30.3)	13 (27.1)	
0–1 cm	44 (57.9)	30 (62.5)	
> 1 cm	9 (11.8)	5 (10.4)	

Data are presented as n (%), unless otherwise indicated.

ASA = American Society of Anesthesiologists; BMI = body mass index; FIGO = International Federation of Gynecology and Obstetrics; MBP = mechanical bowel preparation; SD = standard deviation.

Table 2
Duration of antibiotic treatment.

Day	MBP (n = 76)	No MBP (n = 48)	p
1	3 (3.9)	2 (4.2)	0.97
2	21 (27.6)	13 (27.1)	
3	33 (43.4)	20 (41.7)	
4	9 (11.8)	6 (12.5)	
5	3 (3.9)	1 (2.1)	
6	0	1 (2.1)	
≥7	7 (9.2)	5 (10.4)	

Data are presented as n (%).

MBP = mechanical bowel preparation.

residual tumor size, duration of antibiotic treatment, surgical procedures, and occurrence of surgical and nonsurgical complications, were compared between the MBP and NMBP groups. All individual information of the patients was well protected, and the protocol was approved by the Institutional Review Board of Tri-Service General Hospital. Data management and statistical analyses were under the responsibility of the Tri-Service General Hospital. The two-sample independent *t* test was used for comparisons between the MBP and NMBP groups and SPSS version 20.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analysis.

Results

No differences were found between the MBP and NMBP groups with regard to mean age, FIGO stage (IIIA, IIIB, IIIC, or IV), ASA grade (1, 2, or 3), BMI, or residual tumor size (0, 0–1, or > 1 cm; Table 1). The two groups also had a similar duration of antibiotic treatment ($p = 0.97$; Table 2). No differences in surgical procedures were found between groups, which included rectosigmoid resection, left-sided colectomy, right-sided colectomy, transverse colectomy, and multiple bowel resection ($p = 0.99$). A protective stoma was performed in five patients (6.6%) in the MBP group and in three patients (6.3%) in the NMBP group ($p = 1.0$; Table 3). We evaluated the occurrence of surgical complications, including anastomotic leakage, wound infection, and intra-abdominal abscess. One MBP patient and one NMBP patient had a wound infection and anastomotic leakage. Incidence of surgical complications was not significantly different between the MBP and NMBP groups [7.9% ($n = 6$) vs. 10.4% ($n = 5$), $p = 0.78$; Table 4]. Nonsurgical complications, including cardiac events, pneumonia, urinary tract infection, urine retention, postoperative ileus, small bowel obstruction, gastrointestinal tract bleeding, and deep venous thrombosis, occurred in 12 patients (15.8%) in the MBP group and in eight patients (16.7%) in the NMBP group; the difference between groups was not significant ($p = 1.0$; Tables 5 and 6). Total hospital days were also similar between the groups (Table 5).

Table 3
Surgical procedures.

Procedure	MBP (n = 76)	No MBP (n = 48)	p
Surgical procedure			0.99
Rectosigmoid resection	57 (75)	38 (79.1)	
Left-sided colectomy	2 (2.6)	1 (2.1)	
Right-sided colectomy	4 (5.3)	2 (4.2)	
Transverse colectomy	3 (3.9)	2 (4.2)	
Multiple bowel resection	10 (13.2)	5 (10.4)	
Protective stoma	5 (6.6)	3 (6.3)	1.0

Data are presented as n (%).

MBP = mechanical bowel preparation.

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