NEU PRESS

SELÇUK TIP DERGİSİ
SELCUK MEDICAL JOURNAL

DOI:http:/dx.doi.org/10.30733/std.2025.01839
Selcuk Med J 2025;41(2): 78-83

OPEN ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

Incidence of and Risk Factors For Postoperative Ileus in Patients Undergoing Gynecologic Cancer Surgery

Jinekolojik Kanser Cerrahisi Geçiren Hastalarda Postoperatif İleus İnsidansı ve Risk Faktörleri

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ÖZET

Giriş: Postoperatif dönemde görülen paralitik ileus, hastaların oral alıma geçişini geciktirerek taburculuk süresinin uzamasına, hasta memnuniyetinin azalmasına ve hastanede yatış maliyetlerinin artmasına neden olmaktadır. Bu çalışmada, jinekolojik kanser cerrahisi geçiren hasta grubunda postoperatif ileus insidansının belirlenmesi ve bu duruma etki eden temel risk faktörlerinin ortaya konması amaçlanmıştır.

Gereç ve Yöntem: Bu retrospektif kohort çalışma, İzmir Şehir Hastanesi Jinekolojik Onkoloji Kliniğinde 15.10.2023–15.10.2024 tarihleri arasında opere edilen 240 jinekolojik onkoloji hastasının verilerine dayanmaktadır. Postoperatif ileus gelişen ve gelişmeyen hastalar demografik, operasyonel ve klinik değişkenler açısından karşılaştırılmıştır.

Bulgular: Postoperatif ileus insidansı %11,3 olarak saptanmıştır. Asit varlığı, ileus gelişen hastalarda %48,1 oranında izlenmiş ve gelişmeyen gruba kıyasla anlamlı şekilde yüksek bulunmuştur (p<0,001). Asit hacmi 500 ml'nin üzerinde olan olgularda ileus riski artmıştır (p=0,003). İnsizyon tipi ile ileus gelişimi arasında anlamlı ilişki gözlenmiş, supraumbilikal + subumbilikal insizyon yapılan hastalarda ileus oranı daha yüksek bulunmuştur (p<0,001). Transfüzyon uygulanan hastalarda ileus gelişme oranı %63,0 iken, transfüzyon yapılmayan grupta bu oran %12,2'dir (p<0,001). Ek analjezik kullanımı ileus gelişen hastalarda %59,3 oranında olup anlamlı düzeyde yüksektir (p<0,001). Diyabet ve hipertansiyon gibi komorbid hastalıklarla ileus gelişimi arasında anlamlı fark saptanmamıştır. Yeniden hastaneye yatış oranı, ileus gelişen grupta anlamlı şekilde yüksektir (p=0,024).

Sonuç: Jinekolojik onkolojik cerrahi geçiren hastalarda asit varlığı, insizyon tipi, transfüzyon gereksinimi ve ek analjezik kullanımı postoperatif ileus gelişimi ile anlamlı ilişkili bulunmuştur. Bu risk faktörlerinin ameliyat öncesi dönemde değerlendirilmesi, yüksek riskli hastaların tanımlanmasına ve bireyselleştirilmiş cerrahi planlamaya katkı sağlayabilir. Ayrıca, bu verilerin perioperatif yönetim protokollerine entegre edilmesiyle postoperatif komplikasyonların azaltılması ve hasta iyilik halinin artırılması mümkün olabilir.

Anahtar Kelimeler: Analjezi, Asit, İleus, Kanser Cerrahisi, Transfüzyon

ABSTRACT

Aim: Postoperative paralytic ileus delays the resumption of oral intake, prolongs hospital stays, reduces patient satisfaction, and increases hospitalization costs. This study aimed to determine the incidence of postoperative ileus and identify key associated risk factors in patients undergoing surgery for gynecologic malignancies.

Materials and Methods: This retrospective cohort study was conducted at the Gynecologic Oncology Clinic of Izmir City Hospital between October 15, 2023, and October 15, 2024. Clinical data from 240 patients who underwent surgery for gynecologic cancer were analyzed. Patients who developed postoperative ileus were compared with those who did not in terms of demographic, surgical, and clinical characteristics.

Results: The incidence of postoperative ileus was found to be 11.3%. Ascites was observed in 48.1% of patients with ileus, significantly higher than in those without (p<0.001). The risk of ileus increased significantly in cases with ascitic volume greater than 500 mL (p=0.003). A significant association was observed between the type of incision and ileus development; patients who underwent both supraumbilical and subumbilical incisions had a higher rate of ileus (p<0.001). The rate of ileus was 63.0% in patients who received blood transfusions, compared to only 12.2% in those who did not (p<0.001). Additional analgesic use was also significantly higher in patients with ileus (59.3%, p<0.001). No significant association was found between comorbidities such as diabetes or hypertension and ileus development. The hospital readmission rate was significantly higher among patients who developed ileus (p=0.024).

Conclusion: Ascites, incision type, transfusion requirement, and additional analgesic use were significantly associated with postoperative ileus in patients undergoing gynecologic oncology surgery. These findings may aid in the preoperative identification of high-risk patients, enabling individualized surgical planning and the development of targeted perioperative management strategies. Incorporating these findings into perioperative protocols may help reduce complications and enhance postoperative recovery.

Keywords: Analgesia, Ascites, Cancer Surgery, Ileus, Transfusion

Geliş Tarihi/Received: 28 February/Şubat 2025 **Kabul Tarihi/Accepted:** 20 May/Mayıs 2025 **Yayın Tarihi/Published Online:** 27 June/Haziran 2025

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Atıf yapmak için/ Cite this article as: Akdemir C, Balci MF, Karaoglu S, Seker N, Ozen S, Ozuyar Simsek G, Bayramoglu D, Sanci M. Incidence of and Risk Factors For Postoperative Ileus in Patients Undergoing Gynecologic Cancer Surgery. Selcuk Med J 2025;41(2): 78-83

Disclosure: *The author has no financial interest in any of the products, devices, or drugs mentioned in this article. The research was not sponsored by an outside organization. Author has agreed to allow full access to the primary data and to allow the journal to review the data if requested.*

INTRODUCTION

Gastrointestinal dysfunction is one of the most common complications after abdominal gynecological oncology operations. It is characterised by nausea, vomiting and paralytic ileus in the postoperative period. Postoperative nausea and vomiting are prevalent among patients, with an estimated incidence of approximately 30% in the general surgical population (1). Paralytic ileus has been reported in 12.9% to 32% of cases following gynecological oncology surgery (2).

Postoperative paralytic ileus can result in a delay in transitioning patients to an oral regime, prolonged discharge times, reduced patient satisfaction, and elevated hospitalisation costs. Prolonged hospitalisation has been shown to result in a number of adverse outcomes, including hospital-acquired infections, deep vein thrombosis, wound infection and life-threatening complications such as pneumonia. Furthermore, prolonged recovery times and delayed discharge have been shown to hinder the timely initiation of adjuvant radiotherapy and/or chemotherapy in patients undergoing treatment for gynecologic cancers. This study was conducted to determine the possible risks and incidence of postoperative ileus after gynecological cancer surgery.

MATERAILS AND METHODS

This retrospective cohort study included patients who underwent surgery for gynecological cancer between October 15, 2023, and October 15, 2024, at the Gynecological Oncology Clinic of Izmir City Hospital. The present study was conducted in accordance with the Declaration of Helsinki. The data were retrieved from the archives of Izmir City Hospital, and the study was approved by its Ethics Committee (No: 2024/170, Date: 06/11/2024). The study was conducted by evaluating patient demographic characteristics, clinical parameters, operation details and postoperative complication data. Patients over the age of 18 who underwent surgery for gynecologic malignancies and had complete postoperative follow-up data were included in the study. Exclusion criteria were as follows: patients who underwent surgery for benign gynecologic conditions (such as fibroids, endometriosis, or benign ovarian cysts), those referred to another clinic during the postoperative period, patients who underwent HIPEC, those with incomplete follow-up data, inflammatory bowel disease, orthopedic problems affecting mobilization, a history of abdominal radiotherapy, neoadjuvant chemotherapy, or hyperthermic intraperitoneal chemotherapy, those who experienced intestinal injury during surgery, and those who underwent bowel resection. Data from 240 patients were analyzed, and the demographic and clinical characteristics of patients with and without ileus were compared.

All patients followed a standard clinical protocol prior to surgery. Low-molecular-weight heparin was administered based on body weight the evening before surgery, and intravenous prophylactic antibiotics were given 30 minutes prior to incision. Cefazolin was used for antibiotic prophylaxis, while clindamycin or metronidazole was administered in cases of penicillin allergy. All surgical procedures were performed by the same gynecologic oncology surgical team. Data were retrieved from the hospital's electronic medical records and surgical reports. Statistical analysis was conducted using licensed SPSS version 29 software.

In descriptive statistics, categorical variables were expressed as counts and percentages, while continuous variables were reported as medians (interquartile range) or means ± standard deviation. The chi-square test was used to compare categorical variables, while the Mann-Whitney U test or Student's t-test was applied for continuous variables, depending on data distribution. Logistic regression analysis was performed to identify risk factors associated with ileus development. A p-value of <0.05 was considered statistically significant. Results were presented in tables and figures, with odds ratios and 95% confidence intervals reported where appropriate.

RESULTS

A detailed analysis was conducted on the clinical and operative characteristics of 240 patients included in the study. The majority (62.5%) were diagnosed with endometrial cancer, followed by ovarian cancer (32.1%) and cervical cancer (5.4%). Postoperative ileus developed in 11.3% of patients and was noted as a significant clinical concern. Ascites was present in 16.3% of patients; of these, 76.9% had ascitic volumes below 500 mL, while 23.1% exceeded 500 mL. Regarding incision type, subumbilical incisions were used in 74.6% of cases, both subumbilical and supraumbilical in 17.9%, laparoscopic techniques in 5.4%, and Pfannenstiel incisions in 2.1%. Blood transfusion was required in 17.9% of patients; among these, 25.6% received transfusions preoperatively, 25.6% intraoperatively, and 48.8% postoperatively. Additional postoperative analgesic use was observed in 21.3% of patients. Prior abdominal surgery was reported in 47.5% of the cohort.

Comorbidities were present in 44.2% of patients, with diabetes and hypertension accounting for 25.0% and 25.4%, respectively. Drains were used in 68.3% of cases, omentectomy was performed in 32.5%, and lymphadenectomy in 53.3%. The readmission rate was 9.2%, and 34.2% of patients were smokers. Based on BMI, 45.8% were obese, 33.3% overweight, 20.0% normal weight, and 0.8% underweight, indicating a predominance of overweight and obese individuals (Table 1). Age, anthropometric data, laboratory values, and intraoperative variables were assessed in detail. The mean age was 57.4±12.7 years (median: 58, range: 21–87). The median height was 160 cm (143–175), and median weight 75 kg (50–115). These values reflect a predominantly overweight and obese cohort. The median preoperative hemoglobin level was 12.7 g/dL (8.4–15.9), dropping to 11.7 g/dL postoperatively. The median surgical time was 130 minutes (80–250), and anesthesia duration 160 minutes (110–300). Median length of hospital stay was 4 days (1–19), depending on the complexity and extent of surgery (Table 2). Patients who developed ileus showed significant clinical differences. Ascites was present in 48.1% of ileus cases, a significantly higher rate than in patients without ileus ($p<0.001$). The incidence of ileus was

Table 1. Distribution of surgery and patient characteristics

		N %
Indication for Surgery	Endometrial Cancer	150 (62.5)
	Ovarian Cancer	77 (32.1)
	Cervical Cancer	13 (5.4)
Ileus		27 (11.3)
Ascites		39 (16.3)
Ascites Volume	Under 500ml	30 (76.9)
	Above 500ml	9 (23.1)
Incision Type	Laparoscopic	13 (5.4)
	Supraumbilical + Subumblical	43 (17.9)
	Subumbilical	179 (74.6)
	Pfannenstiel	5 (2.1)
Transfusion		43 (17.9)
Transfusion Time	Preoperative	11 (25.6)
	Intraoperative	11 (25.6)
	Postoperative	21 (48.8)
Analgesic Use		51 (21.3)
Operation History		114 (47.5)
Additional Morbidity		106 (44.2)
Diabetes		60 (25.0)
Hypertension		61 (25.4)
Drain		164 (68.3)
Omentectomy		78 (32.5)
Lymph Node Dissection		128 (53.3)
Rehospitalisation		22 (9.2)
Cigarette		82 (34.2)
BMI	Underweight (<18.5)	2 (0.8)
	Normal (18.5-24.9)	48 (20.0)
	Overweight (25.0-29.9)	80 (33.3)
	Obese (29.9<)	110 (45.8)

BMI: Body Mass Index

Table 2. Detailed data on the age, body measurements, laboratory values and surgical procedure of 240 patients in the study.

	Median (IQR)	(Min-Mak)
Age*	58 (19.5) 57.4±12.7	(21-87)
Incision Length	13 (5)	(8-24)
Size	160 (8)	(143-175)
Weight	75 (16)	(50-115)
Preoperative Hemoglobin	12.7 (1.7)	(8.4-15.9)
Postoperative Hemoglobin*	11.7 (2.1) 11.6±1.4	(8-14.9)
Preoperative Potassium	4.2 (0.5)	(3-5.7)
Length of stay (Days)	4 (2)	(1-19)
Duration of Surgery (Min)	130 (80)	(80-250)
Duration of Anesthesia (Min)	160 (80)	(110-300)
Number of Lymph Nodes	6 (16)	(0-49)
BMI	29.4 (7.6)	(17.3-51.1)

• IQR: Interquartile Distribution , BMI: Body Mass Index
* Mean ± standard deviation was given in accordance with the normal distribution.

also significantly greater when ascitic volume exceeded 500 mL (p=0.003). Incision type was another significant factor; combined supraumbilical and subumbilical incisions were used in 59.3% of patients with ileus (p<0.001).

Blood transfusion was required in 63.0% of patients with ileus, compared to only 12.2% in those without (p<0.001), suggesting that transfusion or related factors may contribute to ileus development. Additional analgesic use was significantly higher in ileus patients (59.3%, p<0.001). No significant association was found between ileus and comorbidities such as diabetes or hypertension. However, the readmission rate was significantly elevated in ileus patients (22.2%, p=0.024) (Table 3). The median hospital stay was significantly longer in patients with ileus (7.5 days vs. 4 days, p<0.001). Surgery time (180 vs. 120 minutes, p<0.001), anesthesia duration (p=0.003), and postoperative hemoglobin levels (10.8±1.5 g/dL, p=0.004) were also significantly associated with ileus (Table 4). To identify independent risk factors, a logistic regression analysis included

Table 3. Comparison of operation and clinical features with development of ileus

		Ileus (+) N=27 N %	Ileus (-) N=213 N %	p
Operation Indication	Endometrial Cancer	17 (63.0)	133 (62.4)	0.869
	Ovarian Cancer	8 (29.6)	69 (32.4)	
	Cervical Cancer	2 (7.4)	11 (5.2)	
Ascites	Yes	13 (48.1)	26 (12.2)	<0.001
Ascites Volume	Under 500ml	6 (46.2)	24 (92.3)	0.003
	Above 500ml	7 (53.8)	2 (7.7)	
Incision Type	Laparoscopic	2 (7.4)	11 (5.2)	<0.001
	Supraumbilical+ Subumblical	16 (59.3)	27 (12.7)	
	Subumbilical	7 (25.9)	172 (80.8)	
	Pfannenstiel	2 (7.4)	3 (1.4)	
Transfusion	Yes	17 (63.0)	26 (12.2)	<0.001
Transfusion Time	Preoperative	2 (11.8)	9 (34.6)	0.199
	Intraoperative	6 (35.3)	5 (19.2)	
	Postoperative	9 (52.9)	12 (46.2)	
Analgesic Use	Yes	16 (59.3)	35 (16.4)	<0.001
Operation History	Yes	16 (59.3)	98 (46.0)	0.194
Additional Morbidity	Yes	12 (44.4)	94 (44.1)	0.975
Diabetes	Yes	9 (33.3)	51 (23.9)	0.288
Hypertension	Yes	3 (11.1)	58 (27.2)	0.07
Drain	Yes	19 (70.4)	145 (68.1)	0.809
Omentectomy	Yes	16 (59.3)	62 (29.1)	0.002
Lymph Node Dissection	Yes	19 (70.4)	109 (51.2)	0.06
Rehospitalisation	Yes	6 (22.2)	16 (7.5)	0.024
Cigarette	Yes	12 (44.4)	70 (32.9)	0.232

Chi-square test was applied.

Table 4. Comparison of ileus development and clinical parameters

	Ileus (+) N=27 Median (IQR)	Ileus (-) N=213 Median (IQR)	p
Age*	58(19.5)	58(19.5)	0.41
	59.3±12.4	57.4±12.7	
Incision Length	16(6)	13(4)	0.009
Height	160(8)	160(8)	0.769
Weight	77 (20)	75 (15)	0.978
Preoperative Hemoglobin	13.1 (2.2)	12.7 (1.6)	0.155
Postperative Hemoglobin*	10.5 (2.2)	11.7 (1.8)	0.004
	10.8±1.5	11.7±1.4	
Preoperative Potassium	4.2 (0.4)	4.2(0.5)	0.334
Length of stay (Days)	7.5 (3)	4(2)	<0.001
Duration of Surgery (Min)	180 (40)	120(80)	<0.001
Duration of Anesthesia (Min)	205 (60)	155(85)	0.003
Number of Lymph Nodes	11 (18)	4(16)	0.081
BMI	29.3 (8.3)	29.4(7.5)	0.928

Mann Whitney U test was used. BMI: Body Mass Index
* Student t test was performed in accordance with normal distribution and mean ±standard deviation was given.

Table 5. Logistic regression analysis of factors associated with ileus development

	Odds Ratio (OR)	OR 95% Confidence Interval	p
Postperative Hemoglobin	1.113	(0.655 – 1.888)	0.693
Transfusion	15.065	(2.401 – 94.524)	0.004
Analgesic Use	10.908	(2,586 – 46.015)	0.001
Hospitalisation Duration (Days)	1.510	(1.135- 2.008)	0.005
Rehospitalisation	21.065	(3.318- 133.721)	0.001
Duration of Surgery	1.018	(0.952- 1.089)	0.598
Omentectomy	3.020	(0.692- 13.184)	0.142
Ascites	8.421	(2.041 – 34.744)	0.003
Duration of Anesthesia	0.980	(0.918- 1.046)	0.540

Hosmer, Lemeshow Test: 0,733, Cox&Snell R Square :0,323, Nagelkerke R Square:0,638

all clinically and statistically relevant variables, regardless of individual significance. These included postoperative hemoglobin, length of stay, surgical and anesthesia duration, ascites, transfusion, analgesic use, omentectomy, and readmission. While variables like surgery time, anesthesia, and omentectomy were not statistically significant, they were retained to ensure a comprehensive model. Their inclusion did not affect the odds ratios or significance levels of the primary predictors.

Transfusion (OR: 15.065, 95% CI: 2.401–94.524), additional analgesic use (OR: 10.908, 95% CI: 2.586–46.015), and readmission (OR: 21.065, 95% CI: 3.318–133.721) were identified as the strongest independent predictors. The model demonstrated high diagnostic performance, with a sensitivity of 59.3% (95% CI: 40.5–76.3), specificity of 98.6% (95% CI: 96.4–99.6), positive predictive value of 84.2% (95% CI: 64.0–95.8), and negative predictive value of 95.0% (95% CI: 91.6–97.4). Overall accuracy was 94%, indicating robust discriminatory capacity (Table 5).

DISCUSION

Gastrointestinal dysfunction is a serious postoperative problem that may progress with complications frequently seen in the postoperative period and cause prolonged hospitalisation. Although postoperative gastrointestinal dysfunction may resolve spontaneously, slow return to normal bowel function is associated with increased costs, electrolyte disturbances, malnutrition, patient dissatisfaction, additional complications and delay in adjuvant therapy. The median length of hospitalisation was 7.5 days in patients with ileus (3) and 4 days in patients without ileus (2). The aetiology of postoperative ileus remains unclear; however, it is hypothesised to be the result of a complex interplay between systemic stress responses and local trauma. The pathophysiology of postoperative ileus can be classified as neurogenic, inflammatory and pharmacological (3). Postoperative ileus is a more probable occurrence in prolonged major surgical procedures due to excessive gastrointestinal manipulation and prolonged general anaesthesia. Postoperative pain medications, especially opioids, have been shown to promote the development and worsening of postoperative ileus due to their known inhibitory effects on intestinal motility. Patients undergoing surgery for malignancies are at high risk for postoperative ileus due to the complexity of the procedure, the extensive nature of the operations, and excessive gastrointestinal manipulation.

Numerous studies have shown that excessive manipulation of the intestinal tract during surgical procedures can trigger mast cell activation and subsequent intestinal inflammation, ultimately impairing gastrointestinal motility (4). The advent of minimally invasive techniques has led to a substantial decline in postoperative ileus, attributable to a reduction in tissue trauma and a diminished stimulation of the bowel (5). Although the use of minimally invasive techniques has increased in gynecologic oncology practice, most procedures are still performed via laparotomy, maintaining a persistent risk of postoperative ileus. Despite the occasional necessity for blood transfusion in major surgery, there is an increasing body of evidence indicating its association with a number of postoperative complications. Recent studies in the literature suggest that blood transfusion is associated with a variety of adverse clinical and postoperative complications (6,7). Bakkum-Gamze et al. conducted a study to ascertain the risk factors and incidence of postoperative ileus in women undergoing surgery for ovarian malignancy. The study demonstrated a higher incidence of postoperative ileus in patients who received blood transfusions compared to those who did not. Moreover, the incidence of ileus increased proportionally with the volume of transfused blood (7).

In our study, the need for transfusion was found to be 63.0% in patients who developed ileus, but only 12.2% in those who did not ($p<0.001$). The potential risks associated with the increased incidence of ileus following blood transfusion remain unclear. These risks are likely to arise from difficult surgical resection, prolonged surgery time, impaired fluid balance, contamination, reduced oxygen-carrying capacity and tissue oxygen delivery due to anaemia, and the dose-dependent immunomodulatory effects attributable to allogeneic transfusions (8,9). It has been demonstrated by preceding studies that extended operative times are associated with an increased inflammatory response to bowel manipulation and trauma. As demonstrated by research in the field of animal studies, there is a demonstrable correlation between the extent of bowel manipulation in both the small and large intestine, and the degree of leukocyte infiltration into the intestinal muscularis, as well as the degree of intestinal dysmotility (10). In our study, the median duration of surgery was 180 minutes (IQR: 40) in patients who developed ileus and 120 minutes (IQR: 80) in those who did not ($p<0.001$). In our study, the rate of ileus development in patients who underwent wide incision (supraumbilical+subumblical) was found to be 59.3% and this rate was significantly higher than other incision types.

In gynecological oncology, malignant ascites is most commonly seen in patients with advanced ovarian cancer (11). In the present study, the presence of ascites was observed in 48.1% of patients who developed ileus, a rate that was significantly higher than in patients who did not develop ileus. Furthermore, the development of ileus was found to be significantly increased in cases where the volume of ascites exceeded 500 ml. A review of the literature shows a close correlation between the frequency and volume of ascites and the stage of the disease (12,13). In a study conducted by Huang et al. on patients with epithelial ovarian cancer, it was reported that the incidence of ascites and mean ascites volume increased with disease stage. Moreover, the volume of ascitic fluid has been demonstrated to be associated with the number of tumour metastases (13). The incidence of ileus in patients with ascites may be attributed to the stage of the disease, the extent of surgical intervention, and the prolonged duration of surgery. We hypothesise that the presence of abdominal ascites amplifies the inflammatory response to intraoperative manipulation by increasing intestinal oedema and permeability. Further randomised controlled trials are

warranted to elucidate the relationship between ascites and the development of postoperative ileus in this patient population.

Opioids have been demonstrated to exert inhibitory effects on the gastrointestinal tract. These effects encompass a reduction in gastric motility and emptying, an increase in resting tone, an escalation in periodic spasms of the small intestine, and a diminution in propulsive colon movements (14). The use of opioids in perioperative pain management has been implicated in the development of postoperative ileus, and evidence suggests that minimising opioid use may reduce its incidence (15). In the present study, an additional analgesic prescription was observed in 59.3% of patients who developed ileus during the postoperative period, a rate that was found to be significantly high. In light of our findings, special attention should be paid to the selection and administration of analgesics in patients undergoing gynecologic cancer surgery. The adoption of multimodal analgesia strategies and minimisation of opioid use where feasible may significantly contribute to reducing the incidence of postoperative ileus. Individualising postoperative pain management strategies for high-risk patients may significantly enhance recovery outcomes.

The primary limitation of this study is its single-centre design, which focused exclusively on postoperative ileus following gynecologic surgeries. Consequently, the findings may not be generalisable beyond the specific patient demographics, surgical techniques, and postoperative care protocols of the institution. It is important to acknowledge that considerable variability exists in clinical practices and patient populations across different healthcare settings. Consequently, it may not be possible to extrapolate the results of this study to other institutions or to a generalised context. Since the study is specific to our clinic, it is recommended that caution be exercised when interpreting the results on a wider scale.

Consequently, postoperative ileus was observed in 11.3% of patients who underwent surgical treatment for gynecologic malignancies. The primary predictive factors identified were the presence of ascites, the requirement for blood transfusion, and the administration of additional postoperative analgesics. To mitigate the risk of postoperative ileus, analgesics should be administered judiciously, with particular caution regarding opioid use. Patients receiving transfusions or presenting with ascites should be closely monitored in the postoperative period, and early mobilisation should be actively encouraged.

Conflict of interest: *The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.*

Financial conflict of interest: *Author declares that he did not receive any financial support in this study.*

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REFERENCES

1. Gan TJ, Diemunsch P, Habib AS, et al. Fourth Consensus Guidelines for the Management of Postoperative Nausea and Vomiting. Anesth Analg. 2020;131:411–48. doi:10.1213/ANE.0000000000004833.
2. Güngördük K, Özdemir İA, Güngördük Ö, et al. Effects of coffee consumption on gut recovery after surgery of gynecological cancer patients: a randomized controlled trial. Am J Obstet Gynecol. 2017;216(2):145.e1–7. doi:10.1016/j.ajog.2016.10.019.
3. Luckey A, Livingston E, Tache Y. Mechanisms and treatment of postoperative ileus. Arch Surg. 2003;138(2):206–14. doi:10.1001/archsurg.138.2.206.
4. Peters EG, Dekkers M, van Leeuwen-Hilbers FW, et al. Relation between postoperative ileus and anastomotic leakage after colorectal resection: a post hoc analysis of a prospective randomized controlled trial. Colorectal Dis. 2017;19(7):667–74. doi:10.1111/codi.13582.
5. Wang H, Wang Y, Xing H, et al. Laparoscopic surgery within an enhanced recovery after surgery (ERAS) protocol reduced postoperative ileus by increasing postoperative Treg levels in patients with right-side colon carcinoma. Med Sci Monit. 2018;24:7231–7. doi:10.12659/MSM.910817.
6. Liu L, Wang Z, Jiang S, et al. Perioperative allogeneic blood transfusion is associated with worse clinical outcomes for hepatocellular carcinoma: a meta-analysis. PLoS One. 2013;8(5):e64261. doi:10.1371/journal.pone.0064261.
7. Bakkum-Gamez JN, Langstraat CL, Martin JR, et al. Incidence of and risk factors for postoperative ileus in women undergoing primary staging and debulking for epithelial ovarian carcinoma. Gynecol Oncol. 2012;125(3):614–20. doi:10.1016/j.ygyno.2012.02.027.
8. Remy KE, Hall MW, Cholette J, et al. Mechanisms of red blood cell transfusion-related immunomodulation. Transfusion. 2018;58(3):804–15. doi:10.1111/trf.14488.
9. Li G, Rachmale S, Kojicic M, Shahjehan K, et al. Incidence and transfusion risk factors for transfusion-associated circulatory overload among medical intensive care unit patients. Transfusion. 2011;51(2):338-43. doi:10.1111/j.1537-2995.2010.02816.x.
10. Türler A, Moore BA, Pezzone MA, et al. Colonic postoperative inflammatory ileus in the rat. Ann Surg. 2002;236(1):56-66. doi:10.1097/00000658-200207000-00010.
11. Ford CE, Werner B, Hacker NF, et al. The untapped potential of ascites in ovarian cancer research and treatment. Br J Cancer. 2020;123(1):9-16. doi:10.1038/s41416-020-0875-x.
12. Ayhan A, Gultekin M, Taskiran C, et al. Ascites and epithelial ovarian cancers: a reappraisal with respect to different aspects. Int J Gynecol Cancer. 2007;17(1):68-75. doi:10.1111/j.1525-1438.2006.00777.x.
13. Huang H, Li YJ, Lan CY, et al. Clinical significance of ascites in epithelial ovarian cancer. Neoplasma. 2013;60(5):546-52. doi:10.4149/neo_2013_071.
14. Camilleri M. Opioid-induced constipation: challenges and therapeutic opportunities. Am J Gastroenterol. 2011;106(5):835-42; quiz 843. doi:10.1038/ajg.2011.30.
15. Wu CL, King AB, Geiger TM, et al; Fourth Perioperative Quality Initiative Workgroup. American Society for Enhanced Recovery and Perioperative Quality Initiative Joint Consensus Statement on Perioperative Opioid Minimization in Opioid-Naïve Patients. Anesth Analg. 2019;129(2):567-577. doi:10.1213/ANE.0000000000004194.