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Treatment outcomes in patients using early mobilization aids following uterine and ovarian surgery at Nghe An Oncology hospital, 2024

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ABSTRACT

Objective: *To assess the treatment outcomes of patients using early mobilization aids following uterine and ovarian surgery at the Department of Adnexal Surgery, Nghe An Oncology Hospital in 2024.* ***Participants and Methods****: A cross-sectional descriptive study was conducted on over 150 patients who underwent uterine and ovarian resections at the Department of Adnexal Surgery, Nghe An Oncology Hospital. The effectiveness of early mobilization aids was assessed based on patient compliance and recovery progress. Early mobilization aids, developed as a hospital-level technical innovation in 2023, were implemented at Nghe An Oncology Hospital under Conclusion No. 104/BC-BVUB (January 15, 2024).* ***Results****: All patients strictly adhered to early mobilization instructions, achieving a 100% compliance rate. Most patients actively performed early mobilization exercises at a high rate. The mean time for patients to sit up and ambulate independently was 2.1 ± 0.32 days. The mean time for drain removal was 2.9 ± 0.12 days, and the mean length of postoperative hospitalization was 6.35 ± 1.44 days. The postoperative complication rate was only 1.4%.* ***Conclusion****: Early mobilization aids significantly improved recovery outcomes for patients undergoing uterine and ovarian surgery. The implementation of these aids should be encouraged in clinical practice to enhance postoperative recovery and reduce complications.*

Keywords**:** *Early postoperative mobilization, uterine and ovarian surgery.*

INTRODUCTION

Uterine and ovarian disorders are among the most common pelvic diseases. In particular, uterine fibroids have a high prevalence, affecting 20-25% of women of childbearing age and up to 70% of women aged 45 and older [1]. In recent years, uterine fibroids have been the leading indication for hysterectomy worldwide. Additionally, other gynecological surgical conditions, such as endometrial cancer, ovarian cancer, and cervical cancer, are also highly prevalent. Common surgical techniques include laparoscopic and open hysterectomy, with or without oophorectomy.

Postoperative treatment and care strategies focus on promoting rapid recovery, reducing hospital stay, and minimizing medical costs. One of the primary factors delaying recovery and prolonging hospital stay is postoperative pain and paralytic ileus. The Enhanced Recovery After

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Surgery (ERAS) program has been proven effective in accelerating recovery and is widely implemented worldwide. Early mobilization, a key component of the ERAS program, is strongly supported by evidence for its role in enhancing postoperative recovery. The enhanced early recovery program after surgery also contributes to reducing postoperative complications [2]. A study by Susanne Reuter et al (2022) on the impact of early mobilization in patients undergoing ovarian cancer surgery demonstrated a significant reduction in postoperative complications and hospital stay. Furthermore, patients in the early mobilization group had lower rates of intensive care unit transfer and postoperative mortality compared to those receiving standard care [3].

In Vietnam, compliance with and implementation of the ERAS postoperative rehabilitation program, including early mobilization, have been introduced but remain insufficiently emphasized [4]. Additionally, patients often lack adequate information, specific guidance, and effective supervision regarding early postoperative mobilization. Notably, there is a limited number of studies evaluating the effectiveness of early mobilization in patients undergoing uterine and adnexal surgery. Therefore, further research is needed to assess the independent impact of early mobilization in this patient population.

At the Department of Adnexal Surgery, Nghe An Oncology Hospital, early mobilization support devices for patients undergoing uterine and ovarian surgery have been implemented since September 2023. Thus, this study aims to assess the treatment outcomes of patients using early mobilization aids following uterine and ovarian surgery at the Department of Adnexal Surgery, Nghe An Oncology Hospital in 2024.

RESEARCH PARTICIPANTS AND METHODS

Research participants:

This study included patients undergoing uterine and adnexal surgery at Nghe An Oncology Hospital.

Inclusion criteria: Patients ≥18 years old who underwent uterine and adnexal surgery at the Department of Adnexal Surgery.

Exclusion criteria: Patients with impaired consciousness, multiple-organ surgeries, or severe comorbidities (e.g., advanced heart failure, severe respiratory failure).

Research period:

From March 2024 to June 2024.

Research location:

Department of Adnexal Surgery, Nghe An Oncology Hospital.

Research design:

This was a descriptive cross-sectional study.

Sample size and sampling method:

A complete sampling method was employed, including all eligible patients during the study period. A total of 150 patients met the inclusion criteria.

Data collection method:

Patients received standardized postoperative care. Data were collected using a structured research formby trained nurses specializing in early mobilization.

Early mobilization aids, developed as a hospital-level technical innovation in 2023,

were officially implemented at Nghe An Oncology Hospital under Conclusion No. 104/BC-BVUB (January 15, 2024). These aids were designed to facilitate postoperative mobilization and included the following features: an IV pole and urinary drainage bag holder, a stable forearm support to reduce incision pain during movement, an adjustable height frame to accommodate different patient statures, and lockable wheels for controlled movement. These aids were applied to patients within 24-48 hours post-abdominal surgery until they could ambulate independently. Patients were instructed to use the aids for 15–30 minutes per session, three times daily throughout hospitalization, until all drainage tubes were removed, oral intake was resumed, and independent ambulation was achieved. The aids were provided free of charge, similar to other hospital mobility devices.

Study variables:

+ *Demographic and clinical characteristics***:**

Age group, parity, number of living children, history of pelvic surgery, surgical method.

+ *Postoperative mobilization adherence*:

Adherence to postoperative mobilization instructions was assessed using a structured checklist based on patients' compliance with early mobilization instructions. Adherence was classified as *Yes* (fully adhered) or *No* (did not adhere), confirmed through direct observation and documentation.

+ *Performance in early postoperative mobilization exercises*:

Patient performance in mobilization exercises on the first postoperative day was evaluated using a structured checklist for five key exercises: breathing exercises, double-leg bridge, side-lying position, sitting up in bed, and standing/walking with assistance. Performance was recorded as "performed correctly" or "not performed correctly".

+ *Treatment outcomes*:

Treatment outcomes of patients using postoperative mobility aids were assessed based on three indicators—time to independent ambulation, time to drainage tube removal, and postoperative length of hospitalization—documented daily in medical records.

+ *Postoperative complications*:

Were identified through medical records and clinical evaluations based on predefined diagnostic criteria, including bleeding, infection, partial intestinal obstruction, surgical site fistula, and thrombosis. The overall complication rate was calculated as the percentage of patients experiencing at least one complication out of the total study population.

Data processing and analysis:

All data were analyzed using SPSS 25.0 software. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to analyze the study findings.

Research ethics:

This study was approved by the Hospital's Scientific Council under Decision No. 621/QD-BVUB dated March 21, 2024. The early mobilization support aids, developed in 2023, was officially implemented at Nghe An Oncology Hospital under Conclusion No. 104/BC-BVUB (January 15, 2024).

RESULTS

Table 1. General characteristics of patients (N = 150)

Characteristics		n	%
Age group	< 45	48	32.0
	45 – 60	56	37.3
	61 – 75	32	21.3
	> 75	14	9.4
Parity	0	15	10.0
	1	53	35.3
	2	57	38.0
	≥ 3	25	16.7
Number of live births	0	18	12.0
	1	55	36.7
	2	55	36.7
	≥ 3	22	14.6
Pelvic surgery	Yes	90	60.0
	No	60	40.0
Surgical method	Open surgery	30	20.0
	Laparoscopic surgery	120	80.0

Table 1 presents the general characteristics of the 150 patients included in the study. The majority of patients were aged between 45 and 75 years (58.6%), with 32.0% under 45 years and 9.4% over 75 years. Regarding parity, most patients had one or two live births (73.3%), while 10.0% had never given birth. Similarly, the number of living children followed a comparable pattern, with 73.4% of patients having one or two children. A total of 60.0% of patients had a history of pelvic surgery. Regarding the surgical method, laparoscopic surgery was the predominant approach, performed in 80.0% of cases, while open surgery was used in 20.0% of cases.

Table 2. Adherence to postoperative mobilization instructions (N = 150)

Adherence to postoperative mobilization instructions	n	%
Yes	150	100
No	0	0

All patients (100%) in this study strictly adhered to the medical staff's instructions for early postoperative mobilization.

Table 3. Patient performance in mobilization exercises on the first postoperative day (N = 150)

Mobilization exercises	n	%
Correct breathing exercises	147	98.0
Double-leg bridge exercise	148	98.7
Side-lying position	145	96.7
Sitting up in bed	142	94.7
Standing and walking with assistance	137	91.3

A total of 147 patients (98.0%) correctly performed breathing exercises, while 148 patients (98.7%) successfully completed the double-leg bridge exercise on the first postoperative day. Regarding side-lying position, 145 patients (96.7%) adhered to the instructions. Additionally, 142 patients (94.7%) successfully sat up in bed, and 137 patients (91.3%) managed to stand and walk with assistance on the first postoperative day.

Table 4. Treatment outcomes of patients using postoperative mobility aids (N = 150)

Characteristic		n	%
Time to ambulate independently after surgery	1 day	43	28.7
	2 days	76	50.7
	≥ 3 days	31	20.6
	Mean ± SD (days)	2.1 ± 0.32	
Time to remove drainage tubes	1 – 3 days	134	89.3
	4 – 6 days	16	10.7
	≥ 7 days	0	0.0
	Mean ± SD (days)	2.9 ± 0.12	
Postoperative length of hospitalization	≤ 7 days	102	68.0
	8 – 10 days	32	21.3
	≥ 11 days	16	10.7
	Mean ± SD (days)	6.35 ± 1.44	

The majority of patients were able to ambulate independently by the second postoperative day (76 patients, 50.7%), with a mean ambulation time of 2.1 ± 0.32 days. Most patients (89.3%) had all drainage tubes removed within 1–3 days postoperatively, and no cases required drainage tube removal beyond 7 days. The mean duration for drainage tube removal was 2.9 ± 0.12 days. Regarding postoperative length of hospitalization, 68.0% of patients (102 cases) were discharged within 7 days, with a mean hospital stay of 6.35 ± 1.44 days.

Table 5. Postoperative complication rate (N = 150)

Complications	n	%
Bleeding	0	0.0
Infection	1	0.7
Partial intestinal obstruction	1	0.7
Surgical site fistula	0	0.0
Thrombosis	0	0.0
Total	2	1.4

The postoperative complication rate in the study group was 1.4% (2/150 patients). Specifically, infection and partial intestinal obstruction were each observed in one case (0.7%). No cases of bleeding, surgical site fistula, or postoperative thrombosis were recorded.

DISCUSSION

General characteristics of the research participants: The age distribution of patients in this study encompassed a broad range, allowing for a comprehensive analysis of the impact of early mobilization across different age groups. Notably, the majority of participants (69.3%) were under 61 years old, suggesting that early mobilization may be particularly beneficial for this demographic. This observation underscores the need for further research on the potential advantages of early mobilization among working-age adults, who are generally in better health and possess greater physical resilience. Individuals in this age group tend to have better cardiovascular and musculoskeletal function, enabling them to adapt more efficiently to early mobilization protocols and achieve favorable postoperative outcomes [5]. Furthermore, their enhanced recovery capacity may contribute to a shorter postoperative recovery period and improved musculoskeletal strength and flexibility. These findings highlight early mobilization as a potential strategy for optimizing postoperative recovery and overall quality of life in younger patients. The diverse age distribution within the study population provides a valuable opportunity for further investigation into the differential effects of early mobilization across age groups.

An analysis of the obstetric and gynecological history of the participants offers critical insights into their reproductive health status, including parity, number of living children, and previous uterine or ovarian surgeries. Understanding these factors is essential, as they may influence postoperative recovery and the feasibility of early mobilization. Women with a history of multiple childbirths, particularly those with three or more deliveries, may be at higher risk of postoperative complications due to structural changes in the pelvic region and reproductive organs. These changes could contribute to delayed recovery or increased susceptibility to complications. Conversely, women who have never given birth may experience a more favorable recovery trajectory, as their bodies have not undergone these physiological alterations [6].

Additionally, prior surgical history is a critical determinant of postoperative outcomes. Patients with a history of gynecological surgeries may have an increased risk of postoperative complications, including bowel adhesions or impaired wound healing, which could delay early mobilization. The presence of scar tissue from previous procedures may necessitate a more cautious approach to rehabilitation to minimize potential complications. The surgical method employed also plays a pivotal role in determining the feasibility and effectiveness of early mobilization. Patients undergoing laparoscopic surgery typically experience fewer postoperative complications and greater ease in initiating early mobilization, leading to accelerated recovery. In contrast, individuals requiring open surgery, particularly those with complex medical conditions, may necessitate a more individualized and gradual rehabilitation plan to ensure safety and optimize recovery outcomes.

Adherence to instructions and performance of early postoperative mobilization: The findings of this study demonstrated a complete adherence rate (100%) to early postoperative mobilization instructions among all patients in the study group. This reflects strong patient cooperation with healthcare providers, as well as the effectiveness of clear instructions and thorough explanations regarding postoperative mobilization techniques. A perfect compliance rate is a crucial factor in promoting rapid recovery and minimizing postoperative complications.

However, when analyzing adherence to specific early mobilization exercises, variations were observed across different types of exercises. Among these, breathing exercises exhibited the highest compliance rate, with 98.0% of patients performing them correctly. A study by Dunja Kokotovic et al (2021) reported that patients practicing breathing exercises with high expiratory resistance experienced a significant reduction in respiratory complications (OR = 0.42, 95% CI: 0.18–0.97, p = 0.04) [7]. This exercise is particularly beneficial in enhancing respiratory function and preventing pulmonary complications, especially after abdominal or thoracic surgery. The high adherence rate to breathing exercises in this study suggests that patients were well aware of their importance and were able to incorporate them into their recovery process effectively.

Regarding the bridging exercise (raising the buttocks with both legs), 98.7% of patients performed it correctly on the first postoperative day. This exercise plays a critical role in strengthening the pelvic and lower back muscles, improving blood circulation, and reducing the risk of deep vein thrombosis. The high compliance rate suggests that most patients possessed sufficient physical capacity and did not encounter significant difficulties in executing this movement. However, as patients progressed to more physically demanding exercises, such as side-lying and sitting up in bed on the first postoperative day, the compliance rates showed a slight decline. Specifically, 96.7% of patients successfully performed the side-lying exercise, while 94.7% managed to sit up in bed. This suggests that some patients may have faced challenges due to postoperative pain or muscle weakness. Among all exercises, the standing and assisted walking exercise exhibited the lowest compliance rate, with 91.3% of patients successfully performing it, while 8.7% were unable to do so. This exercise is particularly important as

it facilitates early motor activation, prevents complications such as intestinal adhesions and seroma, and reduces the risk of pneumonia. However, standing and walking after surgery require coordination between the patient and assisting personnel, as well as adequate muscle strength, which may explain why a subset of patients struggled with this task. These findings highlight the need for enhanced guidance and support, particularly for physically demanding exercises, to ensure that all patients can engage in early mobilization safely and effectively.

Treatment outcomes in patients using early postoperative mobility support aids: The time required for patients to begin ambulation after surgery in our study aligns with findings from previous international research. A study by Rose-Marie et al (2022) reported that 12% of patients initiated early mobilization within 48 hours, whereas 100% of patients in the intervention group were mobilized within this timeframe ($p < 0.001$) [8]. Similarly, Ricci et al. (2024) found that 81% of patients were able to get out of bed, 71% could stand and move within 2 to 3 hours after being transferred to the postoperative unit, and 10% were capable of sitting, standing, and walking within the first hour [9]. Early mobilization plays a crucial role in reducing postoperative complications, including deep vein thrombosis, intestinal adhesions, and pneumonia, which are commonly associated with prolonged immobility.

Another critical factor influencing postoperative recovery is the timing of drain removal. In our study, the majority of patients underwent early drain removal, which not only signified positive wound healing but also minimized the risks of infection and seroma formation. However, 10.7% of patients required 4-6 days for drain removal, likely due to surgical complexity or delayed recovery. No patient required drain retention beyond seven days, suggesting that postoperative complications in our study population were relatively mild. The mean duration for drain removal was 2.9 ± 0.12 days, reflecting a relatively uniform recovery trajectory among the patients.

A study by Susanne Reuter et al (2022) in Germany also demonstrated the benefits of early mobilization after uterine and adnexal surgery as part of the Enhanced Recovery After Surgery (ERAS) protocol. The total postoperative complication rate was significantly lower in the ERAS group (29.8%) compared to the pre-ERAS group (52.8%) ($p = 0.011$), and the length of hospital stay was significantly reduced (ERAS: 11 [6–23] days vs. pre-ERAS: 13 [6–50] days; $p < 0.001$). Moreover, the proportion of patients requiring ICU admission was lower in the ERAS group (87.2%) compared to the pre-ERAS group (97.7%) ($p = 0.022$). The mortality rate was 0% in the ERAS group compared to 3.4% in the pre-ERAS group ($p = 0.552$) [3].

When analyzing the relationship between these findings and patient adherence to postoperative instructions, it is evident that strict compliance with early mobilization exercises and medical guidance contributed to a shorter hospital stay. In our study, the 100% adherence rate to prescribed rehabilitation protocols optimized patient recovery and reduced treatment duration. Among the various mobilization techniques, breathing exercises, early sitting, and walking were particularly effective in preventing postoperative complications and facilitating an earlier return to daily activities.

Additionally, a history of gynecological surgery significantly impacted the recovery process. Patients with previous uterine or ovarian surgery or multiple childbirths tended to experience slower recovery due to pre-existing physiological alterations or prior tissue damage. Consequently, these patients required extended treatment durations compared to those without a history of complex gynecological conditions [10].

In summary, postoperative recovery is influenced by both adherence to early mobilization protocols and the patient's gynecological history. These factors collectively determine recovery speed and the overall length of hospital stay.

This study has some limitations. First, the relatively small sample size from a single hospital may restrict the generalizability of the findings to broader populations. Second, unmeasured variables such as individual pain tolerance and psychological readiness may have influenced recovery outcomes, potentially introducing confounding effects. Third, the study did not assess long-term postoperative outcomes, limiting the ability to evaluate the sustained benefits of early mobilization. Lastly, reliance on self-reported adherence may have introduced recall bias, affecting the accuracy of the reported data. Despite these limitations, the study provides valuable insights into the role of early mobilization in enhancing postoperative recovery.

CONCLUSION

This study highlights the positive impact of early mobilization aids on postoperative recovery in patients undergoing uterine and ovarian surgery. All patients in the study strictly adhered to early postoperative mobilization protocols, highlighting the collaborative efforts and commitment of both patients and healthcare providers in the rehabilitation process. The high adherence rate to mobility support device use and early postoperative mobilization not only contributed to favorable recovery outcomes but also underscored the effectiveness of medical guidance and patient engagement. These findings reflect the crucial role of structured rehabilitation programs in optimizing postoperative recovery.

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